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W 3215 SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.



No. 1.

WASHINGTON, D. C., DECEMBER 11, 1923.

WINTER 1923-24.

SNOWFALL FOR THE SEASON TO DATE.

Light snows occurred at points in the upper Lake region as early as September 12, the earliest of record in some instances. During the last decade of that month the first snow of the season occurred in the mountains of California, where the depths ranged up to as much as 20 inches above the 5,000-foot level, but this soon melted, except at the higher elevations. At Modena, Utah, snow fell to a depth of nearly one inch on the 27th, the largest amount ever reported at that place so early in the season, and considerable occurred also in some of the high mountains of that State, as well as elsewhere in the western mountain regions.

In October the first important snowfall of the season set in over the central Rocky Mountain districts on the 23d and extended eastward into the Dakotas, Nebraska, and western Kansas during the following day. Some unusually heavy falls for mid-autumn occurred at this time in the mountains of Colorado, Wyoming, and adjacent districts and considerable depths occurred in the adjacent Great Plains. About the same time, unusually early, and in some cases heavy, snows occurred in the southern Appalachian Mountains, depths ranging up to 8 inches being reported at points in the higher elevations of western North Carolina and the adjacent portions of Kentucky and Tennessee. Near the end of the month snow occurred over wide areas from the northern Great Plains eastward. The amounts were mainly light, however, except locally in northern New York.

In the high mountains of the West the total snowfall for October ranged up to a foot or more in the Sierra of California, but farther northward in Oregon and Washington there was little snow. In the Rocky Mountains the amounts were considerably greater, ranging up to 2 feet or slightly more in the high ranges of New Mexico, and to 3 feet or more in the mountains of Colorado and Wyoming. The total falls for the month were considerable in South Dakota and Nebraska and eastward into Iowa.

November had, as a rule, but little snow in the less elevated regions. Light falls occurred over the northern border States from the Great Lakes eastward on the 8th, and about the 10th in northern Arizona and the adjacent portions of Utah and Nevada. On the 23d and 24th light snows occurred from the upper Mississippi Valley eastward to the Great Lakes, and about the 25th and 26th considerable snow fell over the northern portions of New York and New England and adjacent areas of Canada, press reports indicating material interference with traffic in the Adirondack regions. On the 27th snow fell in portions of the Rocky Mountains and again in the Great Lakes region. On the 28th considerable snow fell in the Panhandle of Texas, and extended during the 29th into eastern Kansas and adjacent areas. At the end of the month snow was falling in portions of the Plateau and northern Rocky Mountains, continuing to December 1, and extending eastward into North Dakota.

At 8 p. m. of December 10 no snow cover was present over any portion of New England, an unusual condition, and only traces in the main were reported from the upper Lake region.

In the mountain regions of the West some snow had accumulated at the higher elevations, but there was little in the valleys, save over eastern New Mexico and northwestern Texas where a considerable covering exists due to recent falls.

ICE IN RIVERS AND HARBORS.

At the close of December 10, 1923, no permanent ice had formed on the principal rivers or large lakes of the country.

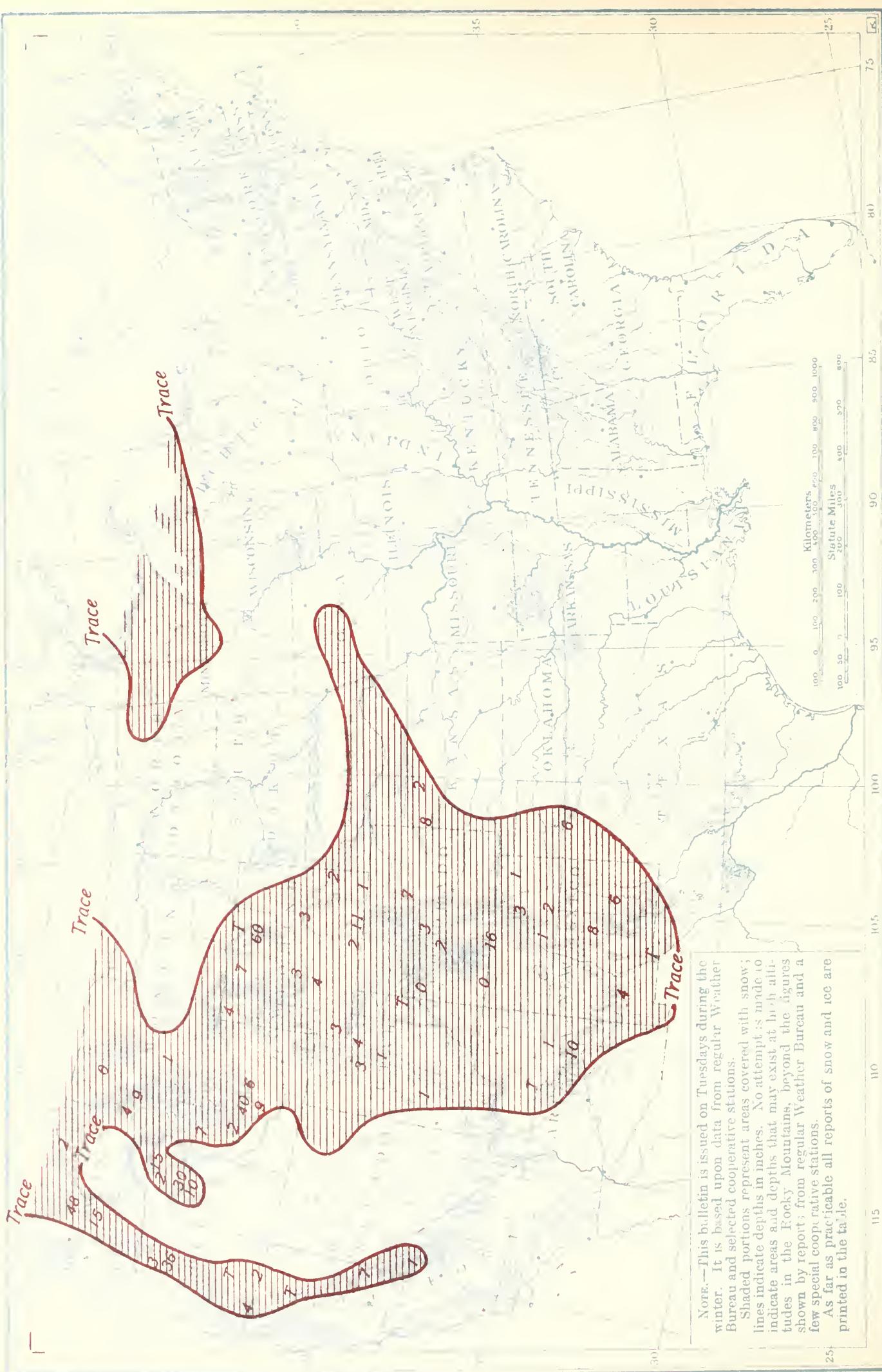
P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS. 8 P. M., DECEMBER 10, 1923.

| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers, har- bors, etc. |
|-------------------------|----------------|--------------------------------------|------------------------|----------------|--------------------------------------|
| <i>Alaska.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Nebraska—Contd.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Eagle | 14 | | North Platte | T. | |
| Nome | 2 | | Omaha | T. 0.0 | |
| <i>Arizona.</i> | | | Tekamah | T. | |
| Douglas | 3 | | <i>Nevada.</i> | | |
| Flagstaff | T. | | Arthur | 4 | |
| Fort Apache | T. | | Elko | 1 | |
| Grand Canyon | T. | | Hilton | 1 | |
| Holbrook | 1 | | McGill | T. | |
| Nogales | 1 | | North Fork | 2 | |
| Pinedale | 10 | | <i>New Mexico.</i> | | |
| Prescott | T. | | Corona | 8 | |
| Williams | T. | | Des Moines | 1 | |
| <i>California.</i> | | | Fort Bayard | 4 | |
| McCloud | T. | | Gibson | T. | |
| Summit | 7 | | Las Vegas | 2 | |
| Yosemite | 1 | | Roswell | 6 | |
| <i>Colorado.</i> | | | Santa Fe | 1 | |
| Crested Butte | 2 | | Taos | 3 | |
| Cumbres | 16 | | Truchas | 1 | |
| Denver | 7 | | <i>North Dakota.</i> | | |
| Leadville | 3 | | Bismarck | 0 | † |
| Pueblo | T. 0.0 | | Devils Lake | T. | |
| <i>Idaho.</i> | | | Williston | 0 | † |
| Hailey | 5 | | <i>Oregon.</i> | | |
| Idaho City | 2 | | Government Camp | 36 | |
| Ketchum | 6 | | Hilgard | 2 | |
| McCall | 7 | | Imperial Mine | 30 | |
| Mackay | T. | | Lakeview | 2 | |
| North Star Mine | 6 | | Prairie City | 2 | |
| Pocatello | T. | | Silver Lake | T. | |
| Soldier Creek | 9 | | Siskiyou | 4 | |
| Vienna Mine | 40 | | Sled Springs | 15 | |
| Wallace | 4 | | Welches | 3 | |
| <i>Iowa.</i> | | | <i>South Dakota.</i> | | |
| Carroll | T. | | Huron | 0 | 4.0 |
| Iowa Falls | T. | | Pierre | 0 | † |
| Marshalltown | T. | | Yankton | 0 | † |
| <i>Kansas.</i> | | | <i>Texas.</i> | | |
| Dresden | 2 | | Amarillo | 6 | |
| Goodland | 8 | | El Paso | T. | |
| <i>Michigan.</i> | | | <i>Utah.</i> | | |
| Houghton | T. 0.0 | | Cedar City | T. | |
| Iron River | T. | | Kelton | T. | |
| Ironwood | T. | | Logan | T. | |
| Marquette | T. 0.0 | | Milford | 1 | |
| Sault Ste. Marie | T. 0.0 | | Ogden | T. | |
| <i>Minnesota.</i> | | | Provo | 1 | |
| Collegeville | T. | | Salt Lake City | 3 | |
| Duluth | T. 1.5 | | Watson | T. | |
| Ely | 2 | | <i>Washington.</i> | | |
| Fort Ripley | T. | | Cascade Tunnel | 48 | |
| Leech Lake Dam | 1 | | Laurier | 2 | |
| Moorhead | 0 | * | Stampede | 15 | |
| Thief River Falls | T. | | <i>Wisconsin.</i> | | |
| <i>Montana.</i> | | | Wausau | 0 | * |
| Haugan | 9 | | <i>Wyoming.</i> | | |
| Havre | 2 | | Casper | 3 | |
| Missoula | T. | | Cheyenne | 1 | |
| Philipsburg | 1 | | Cody | 7 | |
| <i>Nebraska.</i> | | | Dome Lake | 60 | |
| Columbus | T. | | Evanston | 3 | |
| Grand Island | T. | | Foxpark | 11 | |
| Lincoln | T. | | Lander | 3 | |
| | | | Newcastle | 1 | |
| | | | Sheridan | T. | |
| | | | South Pass City | 4 | |
| | | | Torrington | 2 | |
| | | | Yellowstone Park | 4 | |

*Shore ice. † Floating ice. ‡Ice gorged. § Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p. m., December 10, 1923.



SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 2.

WASHINGTON, D. C., DECEMBER 18, 1923.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

Weather conditions during the week just closed were decidedly changeable, but on the whole not materially unusual save the near-blizzard conditions early in the week over the southwestern sections.

At the 8 a. m. observation of Tuesday, the 11th, an extensive area of high pressure covered all interior portions of the country, but over the far Southwest a storm area had appeared during the previous day and snow was falling from Arizona eastward into Texas, and rain thence into the middle Gulf States. Snow continued over New Mexico and portions of adjacent States into the following day and some unusually heavy falls for that section, so early in the winter, were reported. The whole State of New Mexico and the adjacent portions of Arizona and western Texas were reported as covered with a heavy blanket of snow ranging up to 10 inches or more on the Plains where not drifted, and to much greater depths in the mountains.

In exposed localities high winds drifted the snow badly, and hindered railroad transportation for several days and completely blocked many highways. Severe cold during and after the storm caused much suffering and a number of deaths resulted from exposure. The storm was among the most severe ever experienced so far south.

This storm gradually moved eastward and northeastward losing energy, however, and finally merged with a cyclone of considerable force, moving eastward along the northern border.

Some heavy rains attended this cyclonic area, particularly during Thursday and Friday in Texas and over portions of the Mississippi and Ohio Valleys, and local snows occurred in the Great Lakes region and other northern districts, extending southward into the Middle Atlantic States during Friday.

The remainder of the week was mainly free from severe weather conditions, save in the far Northwest where high winds, with rain near the coast and local snows in the mountains occurred about the middle of the week, and local rains occurred over the Southeastern States near the end.

DEPTH OF SNOW.

Over nearly all portions of the country east of the Rocky Mountains the ground remains practically free of snow, the considerable falls toward the latter part of the week over portions of the Ohio Valley and eastward having mainly disappeared, and but little fell in New England and over the Great Lakes region. The heavy fall over New Mexico and portions of adjacent States at the beginning of the week has disappeared to some extent over the lower elevations, although over eastern New Mexico the depths still range up to 10 inches. In the western mountain section there were but few changes as compared with the amounts reported a week ago, except in the middle and southern Rocky Mountains where decreases up to 1 foot appear to have occurred, doubtless from settling rather than melting.

But little snow has accumulated in the high mountains of California, and in general, the snow over lower elevations is unusually light.

ICE IN RIVERS AND HARBORS.

At the close of the week the main rivers, and the harbors of the larger lakes of the country were still open, and only floating or shore ice was reported. On some of the smaller streams ice up to 5 inches thick has formed, principally in the Northern States between the Dakotas and Lake Superior.

Some ice reported last week at the extreme western end of Lake Superior disappeared during the week and no ice of importance appears to have formed so far in New England.

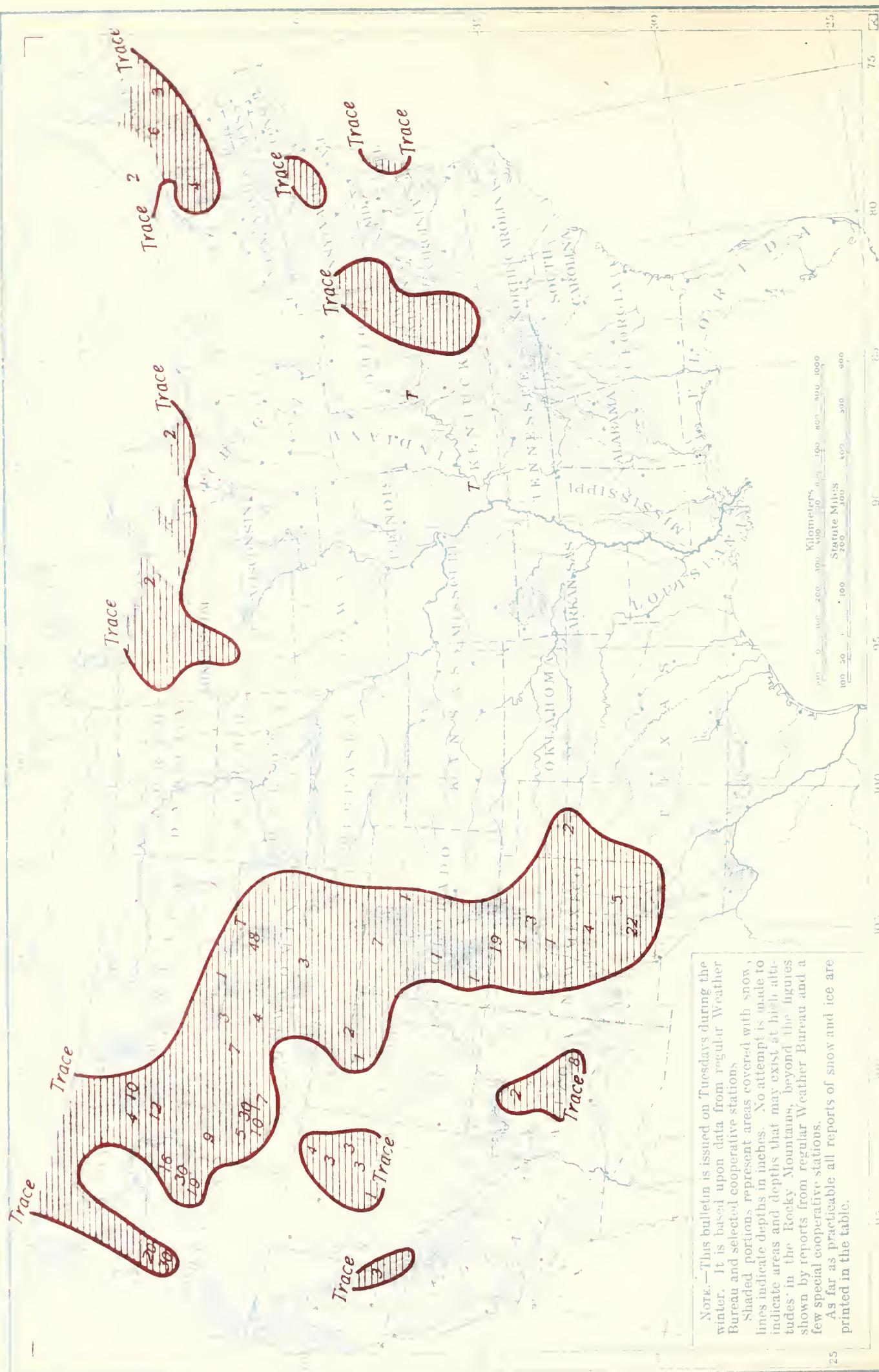
P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., DECEMBER 17, 1923.

| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers, har- bors, etc. |
|-------------------------|---------|--------------------------------------|---------------------------|---------|--------------------------------------|
| Arizona. | Inches. | Inches. | New Hampshire. | Inches. | Inches. |
| Flagstaff | T. | ..... | Lancaster | 6 | ..... |
| Grand Canyon | 2 | ..... | New Jersey. | ..... | ..... |
| Pinedale | 8 | ..... | Cape May | T. | 0.0 |
| Prescott | T. | ..... | Newton | T. | ..... |
| California. | ..... | ..... | New Mexico. | ..... | ..... |
| Emigrant Gap | T. | ..... | Cloudcroft | 22 | ..... |
| Summit | 3 | ..... | Corona | 4 | ..... |
| Colorado. | ..... | ..... | Gibson | T. | ..... |
| Crested Butte | 1 | ..... | Roswell | 5 | ..... |
| Cumbres | 19 | ..... | Santa Fe | 1 | ..... |
| Denver | 1 | ..... | Tres Piedras | 1 | ..... |
| Rico | 1 | ..... | Truchas | 3 | ..... |
| Steamboat Springs | 7 | ..... | New York. | ..... | ..... |
| Delaware. | ..... | ..... | Canton | T. | ..... |
| Millsboro | T. | ..... | Saranac Lake | 4 | ..... |
| Idaho. | ..... | ..... | Syracuse | T. | ..... |
| Boise | T. | ..... | Warwick | T. | ..... |
| Hailey | 5 | ..... | North Dakota. | ..... | ..... |
| Idaho City | 5 | ..... | Bismarck | 0 | * |
| Ketchum | 7 | ..... | Williston | 0 | *† |
| McCall | 9 | ..... | Ohio. | ..... | ..... |
| North Star Mine | 6 | ..... | Cincinnati | T. | 0.0 |
| Soldier Creek | 11 | ..... | Oregon. | ..... | ..... |
| Spencer | 7 | ..... | Baker | T. | ..... |
| Vienna Mine | 39 | ..... | Government Camp | 30 | ..... |
| Wallace | 4 | ..... | Imperial Mine | 30 | ..... |
| Illinois. | ..... | ..... | Larch Mountain | 20 | ..... |
| New Burnside | T. | ..... | Sled Springs | 16 | ..... |
| Iowa. | ..... | ..... | Wallowa | 1 | ..... |
| Dubuque | 0 | *† | Welches | T. | ..... |
| Sioux City | 0 | † | Pennsylvania. | ..... | ..... |
| Maine. | ..... | ..... | Freeland | T. | ..... |
| Eastport | T. | 0.0 | Gordon | T. | ..... |
| Gardiner | 3 | 0.0 | Pittsburgh | T. | 0.0 |
| Michigan. | ..... | ..... | South Dakota. | ..... | ..... |
| Alpena | 0 | * | Huron | 0 | 5.0 |
| Escanaba | T. | * | Texas. | ..... | ..... |
| Houghton | T. | 0.5 | Amarillo | 2 | ..... |
| Humboldt | T. | ..... | Utah. | ..... | ..... |
| Marquette | T. | 0.0 | Manti | 1 | ..... |
| Newberry | 1 | ..... | Milford | T. | ..... |
| Saginaw | 0 | * | Salt Lake City | 1 | ..... |
| Sault Ste. Marie | 2 | 0.0 | Vermont. | ..... | ..... |
| Victoria | 1 | ..... | Northfield | 1 | ..... |
| Minnesota. | ..... | ..... | White River Junct'n | T. | ..... |
| Collegeville | T. | ..... | Virginia. | ..... | ..... |
| Duluth | 0 | * | Wytheville | T. | ..... |
| Ely | 2 | ..... | Washington. | ..... | ..... |
| Fort Ripley | T. | ..... | Spokane | T. | ..... |
| Leech Lake Dam | 1 | ..... | West Virginia. | ..... | ..... |
| Moorhead | 0 | * | Bayard | T. | ..... |
| Thief River Falls | T. | ..... | Clarksburg | T. | ..... |
| Virginia | T. | ..... | Parkersburg | T. | 0.0 |
| Missouri. | ..... | ..... | Wisconsin. | ..... | ..... |
| St. Joseph | 0 | † | La Crosse | 0 | * |
| Montana. | ..... | ..... | Wausau | 0 | 1.0 |
| Haugan | 10 | ..... | Wyoming. | ..... | ..... |
| Red Lodge | 1 | ..... | Alta | 4 | ..... |
| Nevada. | ..... | ..... | Cheyenne | T. | ..... |
| Arthur | 3 | ..... | Dome Lake | 48 | ..... |
| Austin | 1 | ..... | Evanston | 2 | ..... |
| Gold Creek | 4 | ..... | Lander | 3 | ..... |
| Hyton | 3 | ..... | Newcastle | T. | ..... |
| McGill | T. | ..... | Sheridan | T. | ..... |
| North Fork | 3 | ..... | Yellowstone Park | 3 | ..... |

* Shore ice. † Floating ice. ‡ Ice gorged. § Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p.m., December 17, 1923.



SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 3.

WASHINGTON, D. C., DECEMBER 26, 1923.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

High pressure with clear weather and moderate temperatures prevailed over practically all portions of the United States and Canada, as far as observations extend, at the beginning of the week, the weather being particularly warm for this period of the winter in the Canadian Northwest. By Wednesday morning, however, rainy conditions had set in over the Gulf States extending northward into the middle Mississippi Valley, and by Thursday morning the rain area had extended into the Great Lakes and Ohio Valley. At the same time light snow had fallen in portions of the central and southern Plateau and Rocky Mountain regions.

There was a general breaking up of the high pressure area over Eastern districts toward the latter part of the week, and cloudy, unsettled weather, with more or less rain prevailed from Texas northward to the Great Lakes and thence to the Atlantic coast, some heavy falls being reported in Texas and the lower Mississippi Valley. As this unsettled condition passed eastward to the Atlantic coast, rain turned to snow over the more northern districts from the Great Lakes to New England.

From the Mississippi Valley westward the latter part of the week was dominated by high pressure, central over the Plateau region, and fair weather with moderate temperature prevailed, as a rule. At the close of the week, however, pressure was falling in the far West and a storm of considerable severity was approaching the north Pacific coast.

DEPTH OF SNOW.

As compared with the preceding week there have been slight increases in snow depths over New England and in the upper Lake region, although the depths, at most, are but a few inches in northern New England and scarcely measurable in the Lake Superior region. In both these localities the snowfall for the season to date has been far less than usual.

In the western mountains the snowfall conditions changed but little from those reported last week. In New Mexico and portions of adjacent States the considerable body of snow from the severe storm about the middle of the month partly disappeared from the lower levels, but additional snow during the week just closed caused some increases in the total depths at points in the mountains of that section.

There was little or no snow in the mountains of California, only 3 inches being reported at Summit, where usually much greater depths have accumulated at this period of the winter.

Considerable snow disappeared from the high mountains of Oregon and Washington. In Idaho the snow on the ground is far less than normal, and snow is needed locally for stock in Wyoming and Montana.

ICE IN RIVERS AND HARBORS.

Absence of marked cold prevented the formation of any material ice over the main rivers and larger lakes, and at the close of the week there was still an entire absence of important accumulations of ice in any part of the country east of the Rocky Mountains, save for small amounts on the upper Missouri River, and locally in the harbors of Lake Superior.

In New England the absence of any material ice is quite unusual at the Christmas period of the year, and the same may be said concerning the upper Lake region.

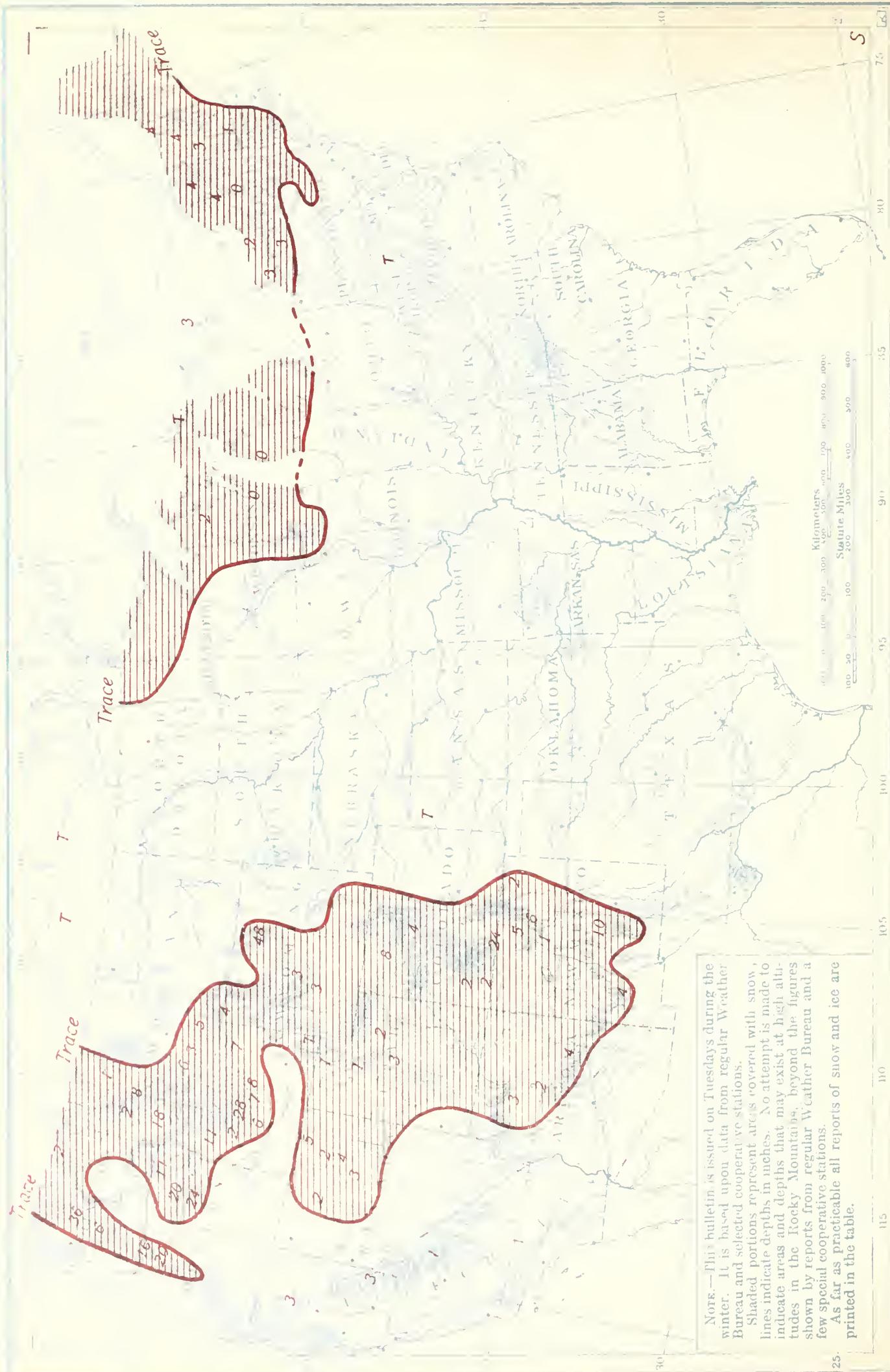
In the Missouri River the ice is about 8 inches thick at Bismarck, and floating ice is reported as far south as Omaha, while there is about 4 inches at Huron, S. Dak. In the Lake Superior district there is now slightly more ice than was reported a week ago.

P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., DECEMBER 24, 1923.

| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers, har- bors, etc. |
|-------------------------------|-------|---|----------------------------|-------|---|
| <i>Arizona.</i> | | | <i>Nevada.</i> | | |
| Flagstaff | 2 | — | Arthur | 4 | — |
| Grand Canyon | 3 | — | Gold Creek | 5 | — |
| Pinedale | 4 | — | Hilton | 3 | — |
| Williams | 1 | — | North Fork | 3 | — |
| <i>California.</i> | | | Winnemucca | 2 | — |
| Huntington Lake | 1 | — | <i>New Hampshire.</i> | | |
| McCloud | 3 | — | Concord | 1 | 0.0 |
| Summit | 3 | — | Pittsburg | 4 | — |
| <i>Colorado.</i> | | | <i>New Jersey.</i> | | |
| Cumbres | 24 | — | Newton | T. | — |
| Denver | T. | — | <i>New Mexico.</i> | | |
| Dillon | 4 | — | Corona | 10 | — |
| Durango | 2 | — | Des Moines | 2 | — |
| Rico | 2 | — | Fort Bayard | 4 | — |
| Steamboat Springs | 8 | — | Santa Fe | 1 | — |
| <i>Connecticut.</i> | | | Tres Piedras | 5 | — |
| Hartford | T. | 0.0 | Truchas | 6 | — |
| <i>Idaho.</i> | | | <i>New York.</i> | | |
| Hailey | 7 | — | Albany | T. | 0.0 |
| Idaho City | 2 | — | Alfred | 3 | — |
| Ketchum | 7 | — | Beaver River | 4 | — |
| McCall | 11 | — | Buffalo | 3 | 0.0 |
| North Star Mine | 8 | — | Canton | 1 | — |
| Pierce City | 18 | — | Rochester | 2 | 0.0 |
| Soldier Creek | 12 | — | Roxbury | 1 | — |
| Spencer | 7 | — | Saranac Lake | 4 | — |
| Vienna Mine | 28 | — | Saratoga Springs | 1 | — |
| Wallace | 2 | — | <i>North Dakota.</i> | | |
| <i>Illinois.</i> | | | Bismarck | 0 | 8.5 |
| Rockford | T. | — | Williston | 0 | * |
| <i>Iowa.</i> | | | <i>Oregon.</i> | | |
| Dubuque | T. | 0.0 | Government Camp | 20 | — |
| Sioux City | 0 | † | Hilgard | 1 | — |
| <i>Kansas.</i> | | | Imperial Mine | 20 | — |
| Goodland | T. | — | Larch Mountain | 16 | — |
| <i>Maine.</i> | | | Sled Springs | 11 | — |
| Eastport | 1 | 0.0 | Wallowa | 2 | — |
| Portland | T. | 0.0 | <i>Pennsylvania.</i> | | |
| <i>Massachusetts.</i> | | | Freeland | T. | — |
| Amherst | 1 | — | <i>South Dakota.</i> | | |
| Williamstown | 1 | — | Huron | 0 | 4.0 |
| <i>Michigan.</i> | | | Pierre | 0 | † |
| Cadillac | 1 | — | Yankton | 0 | *† |
| Detroit | 2 | 0.0 | <i>Utah.</i> | | |
| Escanaba | T. | 0.0 | Duchesne | 2 | — |
| Grand Rapids | T. | — | Logan | 1 | — |
| Grayling | 1 | — | Salt Lake City | 1 | — |
| Houghton | T. | 0.5 | Scofield | 3 | — |
| Humboldt | T. | — | <i>Vermont.</i> | | |
| Iron River | 2 | — | Brattleboro | 1 | * |
| Ironwood | 2 | — | Burlington | 2 | 0.0 |
| Lansing | 1 | — | Northfield | 3 | — |
| Marquette | T. | * | St. Johnsbury | 4 | — |
| Port Huron | 1 | 0.0 | <i>Washington.</i> | | |
| Saginaw | T. | * | Cascade Tunnel | 36 | — |
| Sault Ste. Marie | T. | † | Laurier | 2 | — |
| <i>Minnesota.</i> | | | Stampede | 6 | — |
| Duluth | T. | 3.0 | <i>West Virginia.</i> | | |
| International Falls | T. | — | Bayard | T. | |
| Leech Lake Dam | 1 | — | <i>Wisconsin.</i> | | |
| Moorhead | 0 | * | Brodhead | 1 | — |
| Thief River Falls | T. | — | Fond du Lac | 1 | — |
| <i>Montana.</i> | | | Madison | 1 | — |
| Bozeman | 5 | — | Park Falls | 1 | — |
| Haugan | 8 | — | Wausau | T. | 1.0 |
| Kalispell | 1 | — | <i>Wyoming.</i> | | |
| Pipestone Dam | 3 | — | Dome Lake | 48 | — |
| Silver Lake | 6 | — | Lander | 3 | — |
| <i>Nebraska.</i> | | | South Pass City | 3 | — |
| Omaha | 0 | † | Yellowstone Park | 4 | — |

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable.
T. indicates trace.



Note.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations. Shaded portions represent areas covered with snow, lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.
As far as practicable all reports of snow and ice are printed in the table.

SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 4.

WASHINGTON, D. C., JANUARY 2, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The closing week of the year witnessed a marked speeding up in the atmospheric circulation, as compared with preceding weeks, and cyclones and anti-cyclones of a decided winter type moved rapidly over extensive courses.

The low pressure area entering the country from the North Pacific, at the close of the preceding week, had developed into a storm of considerable intensity over Oregon and Washington by Christmas morning, and during the following few days extended into the middle Rocky Mountain region, and was central Thursday morning over the lower Missouri Valley, whence it moved to the Great Lakes and the Canadian Maritime Provinces. It was attended throughout its course by widely distributed, but mostly light precipitation, snow over the northern districts and rain to the southward. This was quickly followed by another from the same source, which moved rapidly southeastward and by Sunday morning was central over the middle Mississippi Valley whence it moved northeastward to New England by the close of the week. As this storm was moving toward the Mississippi Valley, the first important anticyclone of the winter entered the upper Missouri Valley, attended by temperatures from 20° to 30° or more below zero, and at the close of the week it had extended into the central valleys as a severe cold wave.

DEPTH OF SNOW.

Due to the scattered falls of the week just closed the snow-covered area is now materially greater than existed a week ago, although the depths are still mainly small. However, in the Adirondacks region and over northern New England snow depths up to 18 inches are reported from exposed localities, and amounts up to a foot or slightly more are reported from the upper Lake region. There is a covering of 4 to 8 inches over a considerable area from South Dakota and Nebraska eastward over Iowa and portions of Minnesota, but elsewhere east of the Rocky Mountains the amounts on ground at the close of the week were quite small.

In the western mountains there was more or less snow in nearly all districts and the depths at the high elevations range up to nearly 6 feet, 70 inches being reported from a point in the high mountains of Wyoming. Elsewhere in the Rocky Mountains the greatest depths range from 54 inches at a point in southern Colorado to 30 inches or more in the mountains of Idaho.

In the Sierra Nevada increases up to 2 feet or more were reported from the high elevations of central California and increases nearly or quite as great were reported locally in the mountains of Oregon and Washington.

ICE IN RIVERS AND HARBORS.

Compared with the preceding week the amount of ice increased considerably on the rivers and lakes of the Northwest, due to severe cold during the latter part of the week. On the Missouri the ice is now a foot thick at Bismarck, and floating ice was reported as far south as Kansas City. The upper Mississippi is still comparatively free from solid ice, but some of the tributaries have coverings up to as much as 8 inches. Ice in the harbors of the upper lakes increased several inches in some cases, but none of importance has yet formed on the lower lakes.

In New England ice up to 9 inches is reported from central Maine, but only small amounts have formed elsewhere in that section and practically none on the rivers of the Atlantic coast from the Hudson southward.

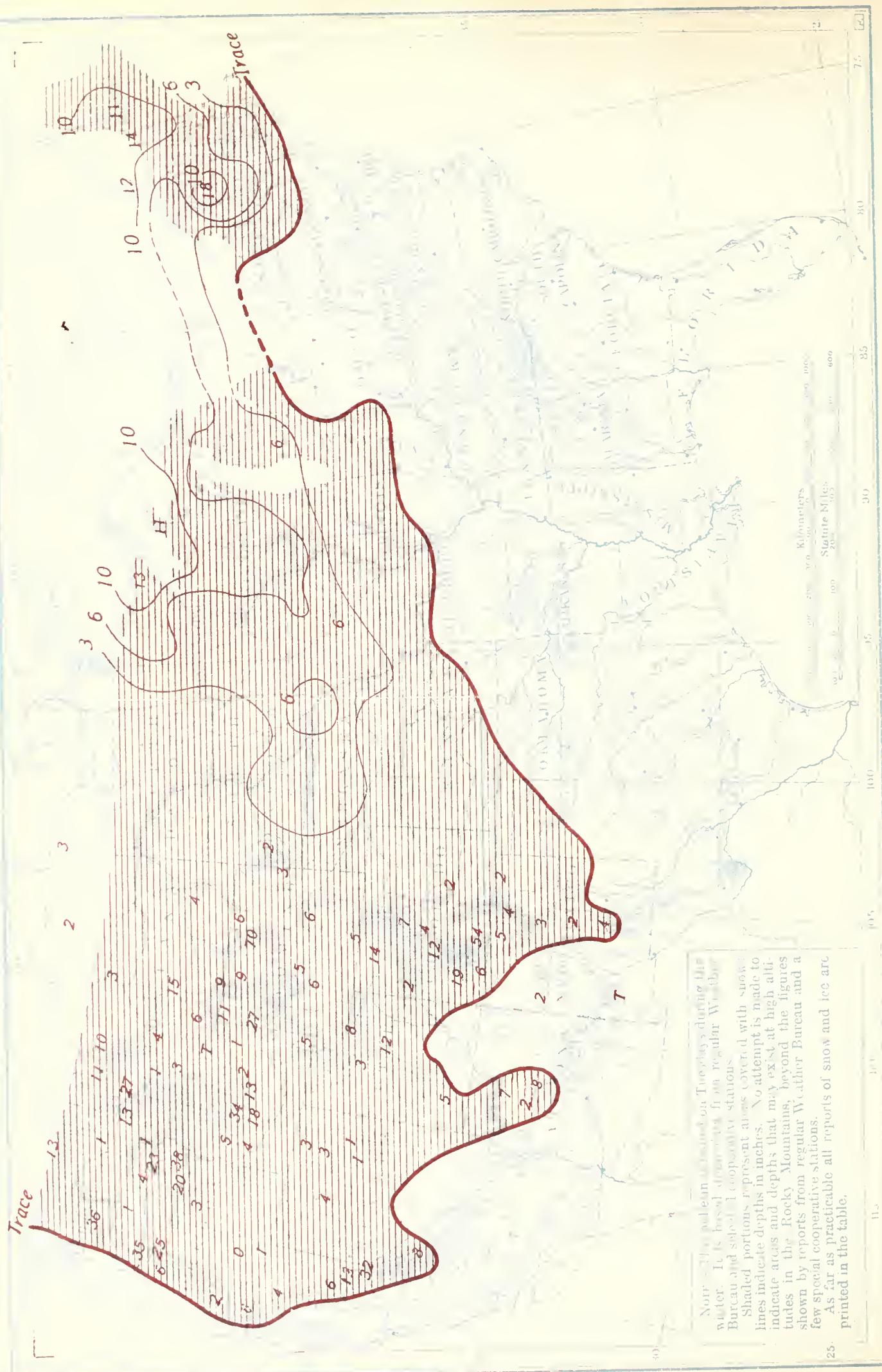
P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., DECEMBER 31, 1923.

| Stations. | Snow. | Ice in rivers har- bors, etc. | Stations. | Snow. | Ice in rivers har- bors, etc. |
|-----------------------------|----------------|-------------------------------------|----------------------------|----------------|-------------------------------------|
| <i>Arizona.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Nebraska.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Flagstaff | 8 | ..... | Lincoln | 2 | ..... |
| Grand Canyon | 7 | ..... | North Platte | 4 | ..... |
| <i>California.</i> | | | Omaha | 5 | * |
| Emigrant Gap | 13 | ..... | O'Neill | 5 | ..... |
| Huntington Lake | 8 | ..... | Valentine | 5 | ..... |
| McCloud | 4 | ..... | <i>Nevada.</i> | | |
| Summit | 32 | ..... | Winnemucca | 4 | ..... |
| <i>Colorado.</i> | | | <i>New Hampshire.</i> | | |
| Cumbres | 54 | ..... | Berlin | 10 | ..... |
| Durango | 6 | ..... | Concord | 6 | 0.0 |
| Grand Junction | 2 | ..... | Pittsburg | 14 | ..... |
| Leadville | 14 | ..... | <i>New Mexico.</i> | | |
| Pueblo | 2 | 0.0 | Taos | 4 | ..... |
| Steamboat Springs | 14 | ..... | Tres Piedras | 5 | ..... |
| <i>Connecticut.</i> | | | <i>New York.</i> | | |
| Hartford | 4 | † | Albany | 6 | * |
| West Cornwall | 4 | ..... | Beaver River | 18 | ..... |
| <i>Idaho.</i> | | | Canton | 3 | ..... |
| Boise | 4 | ..... | De Ruyter | 7 | ..... |
| Hailey | 10 | ..... | Oswego | 2 | 0.0 |
| Soldier Creek | 18 | ..... | Poughkeepsie | 3 | ..... |
| Vienna Mine | 34 | ..... | Roxbury | 7 | ..... |
| <i>Illinois.</i> | | | <i>North Dakota.</i> | | |
| Chicago | 2 | ..... | Bismarck | 2 | 12.0 |
| Monmouth | 2 | ..... | Devils Lake | 2 | ..... |
| <i>Iowa.</i> | | | <i>Oregon.</i> | | |
| Charles City | 9 | ..... | Baker | 3 | ..... |
| Davenport | 1 | *† | Government Camp | 25 | ..... |
| Des Moines | 6 | 1.0 | Hilgard | 4 | ..... |
| Dubuque | 6 | *† | Imperial Mine | 20 | ..... |
| Sioux City | 8 | 4.0 | Siskiyou | 8 | ..... |
| <i>Kansas.</i> | | | Sled Springs | 23 | ..... |
| Dodge City | 1 | ..... | <i>Pennsylvania.</i> | | |
| Topeka | 1 | ..... | Freeland | 4 | ..... |
| <i>Maine.</i> | | | Kingston | 4 | ..... |
| Cornish | 10 | ..... | Providence | 2 | 0.0 |
| Eastport | 6 | 0.0 | <i>South Dakota.</i> | | |
| Gardiner | 9 | 3.0 | Huron | 2 | ..... |
| Greenville | 11 | 9.0 | Pierre | 4 | 5.0 |
| Houlton | 7 | ..... | Rapid City | 2 | ..... |
| Portland | 8 | 0.0 | Yankton | 8 | 3.0 |
| <i>Michigan.</i> | | | <i>Texas.</i> | | |
| Alpena | 9 | 2.0 | Amarillo | 1 | ..... |
| Big Rapids | 3 | ..... | <i>Utah.</i> | | |
| Escanaba | 4 | * | Salt Lake City | 3 | ..... |
| Grand Haven | 5 | ..... | <i>Vermont.</i> | | |
| Grand Rapids | 6 | ..... | Brattleboro | 5 | 3.5 |
| Houghton | 11 | 2.5 | Northfield | 8 | ..... |
| Iron Mountain | 9 | ..... | <i>Washington.</i> | | |
| Lansing | 3 | ..... | Laurier | 13 | ..... |
| Ludington | 5 | ..... | Stampede | 36 | ..... |
| Marquette | 12 | † | Walla Walla | 4 | ..... |
| Saginaw | 2 | 0.5 | <i>Wisconsin.</i> | | |
| Sault Ste. Marie | 7 | 0.5 | Eau Claire | 19 | ..... |
| <i>Minnesota.</i> | | | Fond du Lac | 7 | ..... |
| Duluth | 5 | 6.0 | Green Bay | 7 | 3.0 |
| Ely | 13 | ..... | La Crosse | 0 | 1.0 |
| Leech Lake Dam | 6 | ..... | Madison | 8 | ..... |
| Minneapolis | 3 | ..... | Milwaukee | 5 | 0.0 |
| Montevideo | 4 | ..... | Park Falls | 10 | ..... |
| Thief River Falls | 3 | ..... | Wausau | 9 | 8.0 |
| <i>Montana.</i> | | | <i>Wyoming.</i> | | |
| Bozeman | 6 | ..... | Alta | 27 | ..... |
| Haugan | 27 | ..... | Casper | 6 | ..... |
| Havre | 3 | ..... | Cody | 9 | ..... |
| Helena | 4 | ..... | Dome Lake | 70 | ..... |
| Kalispell | 11 | ..... | Lander | 5 | ..... |
| Miles City | 4 | ..... | Sheridan | 6 | ..... |
| Missoula | 1 | ..... | Yellowstone Park | 11 | ..... |
| Red Lodge | 9 | ..... |  |  |  |

*Shore ice. †Floating ice. ‡Ice gorged. § Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p. m., December 31, 1923.



SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 5.

WASHINGTON, D. C., JANUARY 8, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The cyclonic and anticyclonic activity referred to in the last issue of this bulletin continued with increased energy during the week just closed.

At the beginning of the New Year a storm of considerable force was passing down the St. Lawrence and snow or rain had recently fallen over most districts from the eastern Great Plains to the Atlantic coast, and at 8 a. m. of the 1st snow was still falling locally in the Great Lakes and Ohio Valley, and a storm of considerable extent had developed over the far Southwest attended by rain or snow in the Central and Southern Plateau and Pacific coast States.

The weather was somewhat unsettled during the following 24 hours, with local snows in the Middle Plains and lower Missouri Valley and rains over a narrow area from eastern Texas northeastward to the Carolina coast. By Thursday morning precipitation had fallen over most districts to eastward of the Mississippi Valley, heavy rains being reported from the Ohio Valley and portions of the Gulf States, and more or less snow occurred over the northern districts from the Great Lakes to New England, and rains or snows had likewise fallen from the northern Rocky Mountains westward to the coast and southward to central California.

By Friday morning pressure had risen over nearly all parts of the country, reaching a maximum of 31.00 inches, or slightly higher, in the far Northwest, and temperatures were falling in nearly all districts from the Atlantic to the Pacific.

High pressure persisted over most districts during the latter part of the week, attended by severe cold over all northern and interior districts, the temperatures falling to 30° below zero or lower in portions of the Dakotas and Minnesota, to zero or lower in the middle Mississippi and Ohio Valleys, and to freezing in southern Texas, and northern Florida.

At the close of the week warmer weather had overspread practically all parts of the country, though it still continued cold in the western mountain and Plateau regions. The latter part of the week was without material precipitation save for local snows over some northern districts from the Great Lakes to New England, and scattered rains over the southeastern coast districts.

DEPTH OF SNOW.

The snow-covered area at the close of the week had not changed materially since the week preceding, nor were there important changes in the depth, except over small areas. There was a general increase over the region from the Great Lakes eastward, this being quite large near the coast of southwestern Maine and the adjacent portions of New Hampshire. There was generally a slight reduction in the depths from the Rocky Mountains eastward to the upper Mississippi Valley, and there was some reduction in the depths reported from the mountains of California.

ICE IN RIVERS AND HARBORS.

Due to severe cold the latter part of the week, material increases in ice thickness were reported from all districts where ice had previously formed, and much new ice is reported to the southward.

In the Missouri River the ice now ranges from 6.5 inches at Kansas City to 16 inches at Bismarck, and in the upper Mississippi from 7 inches at Hannibal to 12 inches on some of its upper tributaries. Most of the harbors of the Great Lakes have some ice, ranging up to 15 inches in western Lake Superior. In New England considerable ice now covers the lakes and streams of the northern districts.

P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS. 8 P. M., JANUARY 7, 1924.

| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers, har- bors, etc. |
|------------------------|--------------|---|------------------------|----------|---|
| <i>Arizona.</i> | | | <i>Montana.</i> | | |
| Flagstaff | 4 | | Belton | 18 | |
| Grand Canyon | 4 | | Haugan | 23 | |
| <i>California.</i> | | | Helena | 4 | |
| Huntington Lake | 11 | | Kalispell | 10 | |
| Sierraville | 6 | | Red Lodge | 9 | |
| Summit | 24 | | <i>Nebraska.</i> | | |
| <i>Colorado.</i> | | | Omaha | 3 | 10.0 |
| Cumbres | 46 | | O'Neill | 3 | |
| Grand Junction | 2 | | <i>Nevada.</i> | | |
| Leadville | 4 | | Arthur | 5 | |
| <i>Connecticut.</i> | | | Elko | 4 | |
| Hartford | 4 | 1.0 | North Fork | 8 | |
| West Cornwall | 3 | | Winnemucca | 4 | |
| <i>Idaho.</i> | | | <i>New Hampshire.</i> | | |
| Boise | 4 | | Concord | 23 | |
| Hailey | 9 | | Hanover | 12 | |
| Lewiston | 2 | *† | Pittsburg | 16 | |
| Soldier Creek | 18 | | <i>New York.</i> | | |
| Spencer | 2 | | Albany | 3 | * |
| Vienna Mine | 35 | | Canton | 4 | |
| <i>Indiana.</i> | | | Lowville | 12 | |
| Cambridge City | 2 | | Watertown | 8 | |
| Marion | 3 | | <i>North Dakota.</i> | | |
| Notre Dame | 4 | | Bismarck | T. 16.0 | |
| <i>Iowa.</i> | | | Williston | T. * | |
| Albia | 2 | | <i>Ohio.</i> | | |
| Charles City | 7 | | Ashland | 2 | |
| Davenport | 1 | 9.0 | Cleveland | 3 | † |
| Des Moines | 3 | 8.0 | Sandusky | 3 | 6.0 |
| Dubuque | 5 | 7.0 | Toledo | 3 | 5.0 |
| Forest City | 6 | | <i>Oregon.</i> | | |
| Sioux City | 4 | 8.0 | Detroit | 6 | |
| Waterloo | 5 | | Imperial Mine | 37 | |
| <i>Maine.</i> | | | Siskiyou | 7 | |
| Cornish | 13 | | Sled Springs | 30 | |
| Eastport | 5 | 0.0 | <i>Pennsylvania.</i> | | |
| Gardiner | 15 | 4.0 | Erie | 4 | 3.0 |
| Greenville | 13 | 10.0 | Freeland | 3 | |
| Portland | 22 | 0.0 | <i>South Dakota.</i> | | |
| Van Buren | 13 | | Huron | T. 15.0 | |
| <i>Massachusetts.</i> | | | Pierre | T. 14.0 | |
| Boston | 4 | 0.0 | Yankton | 3 | 15.5 |
| Holyoke | 5 | 4.0 | <i>Utah.</i> | | |
| Williamstown | 4 | | Logan | 8 | |
| <i>Michigan.</i> | | | Moab | 5 | |
| Alpena | 7 | * | Watson | 5 | |
| Cadillac | 7 | | <i>Vermont.</i> | | |
| Detroit | T. 3.0 | | Northfield | 12 | |
| Escanaba | 6 | 9.5 | St. Johnsbury | 14 | |
| Grand Haven | 4 | | <i>Washington.</i> | | |
| Grand Rapids | 6 | | Cascade Tunnel | 75 | |
| Houghton | 15 | 7.5 | Laurier | 13 | |
| Iron River | 6 | | Stampede | 35 | |
| Lansing | 3 | | Walla Walla | 6 | |
| Mancelona | 16 | | <i>West Virginia.</i> | | |
| Marquette | 15 | * | Elkins | 1 | 0.0 |
| Menominee | 10 | | <i>Wisconsin.</i> | | |
| Port Huron | 1 | 4.0 | Brodhead | 6 | |
| Saginaw | 2 | 7.0 | Fond du Lac | 7 | |
| Sault Ste. Marie | 10 | 4.0 | Green Bay | 7 | 11.0 |
| <i>Minnesota.</i> | | | La Crosse | 9 | 6.0 |
| Duluth | 5 | 15.0 | Madison | 6 | |
| Minneapolis | 4 | | Medford | 7 | |
| Moorhead | 8 | 16.0 | Wausau | 6 | 12.0 |
| St. Paul | 4 | 8.0 | <i>Wyoming.</i> | | |
| <i>Missouri.</i> | | | Dome Lake | 62 | |
| Brunswick | 2 | | Evanston | 9 | |
| Hannibal | T. 7.0 | | Sheridan | 5 | |
| Kansas City | T. 6.5 | | South Pass City | 10 | |
| Unionville | 5 | | Yellowstone Park | 10 | |

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p. m., January 7, 1924.



SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 6.

WASHINGTON, D. C., JANUARY 15, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The week ending Monday, January 14, opened with rising temperatures and fair weather in nearly all portions of the country. This was quickly followed by the development of cyclonic conditions and by Thursday morning a storm of considerable extent had moved into the lower Missouri Valley and rain or snow had set in over the greater part of the Mississippi and Missouri Valleys and upper Lake region. During the following 24 hours the storm increased greatly in severity and by Friday morning was central north of Lake Ontario, and precipitation had occurred generally from the Mississippi River eastward, snow falling over the more northern districts, and heavy rains in portions of the Ohio Valley and Gulf States.

The last few days were mainly without extensive precipitation, and the week, as a whole, had but little cloudy or stormy weather over the western mountains and Pacific coast. At the close of the week there were local light snows along the northern border from the Rocky Mountains eastward, and rains had set in over the far Northwest, and locally in Florida and southern Texas. Temperatures were mainly moderate, although it was abnormally warm over the more eastern districts on the 11th, and there were some sharp changes during the week in the northern and central districts.

DEPTH OF SNOW.

Compared with the preceding week, the snow-covered area remains about the same, but the depths have increased generally from the upper Lakes and middle Mississippi Valley westward to and including the Rocky Mountains, though the increases were mainly small, except in Wisconsin and the adjacent portions of Minnesota and Michigan, locally in the lower Missouri Valley and at a few points in the Rocky Mountains.

From the lower Lakes eastward to the New England coast a considerable part of the moderate covering of a week ago disappeared, the reductions in depths ranging up to nearly 10 inches at points in the Adirondack region of New York and to 15 inches in New Hampshire and southern Maine.

In the mountains of the Plateau and Pacific Coast States the changes during the week were mainly unimportant, with but few increases, however. In the high Sierra of California no snow seems to have occurred during the week and the depths now on ground are far less than normal. In the Cascades and other mountains of northern Oregon, and generally over the Rocky Mountain system from Colorado northward, there are fair depths stored in the higher elevations, but in the more southern districts there is now little snow.

The extent of the snow cover and the areas of important depths are shown on the back of this sheet.

ICE IN RIVERS AND HARBORS.

Moderate winter weather during much of the week favored slight increases in the amounts of ice as reported previously, except in the more southern sections where there were some decreases. In the Missouri and upper Mississippi Rivers the increases averaged about 2 inches, and in the upper Lakes they were as much as 5 inches at a few points. In New England the amount of ice is increasing slowly. On the upper Mississippi and its tributaries ice up to 14 inches in thickness is reported and harvest has started as far south as Hannibal, Mo. In New England important harvesting operations have not yet begun, and the Hudson and its main tributaries are still open, except in the more northern portions.

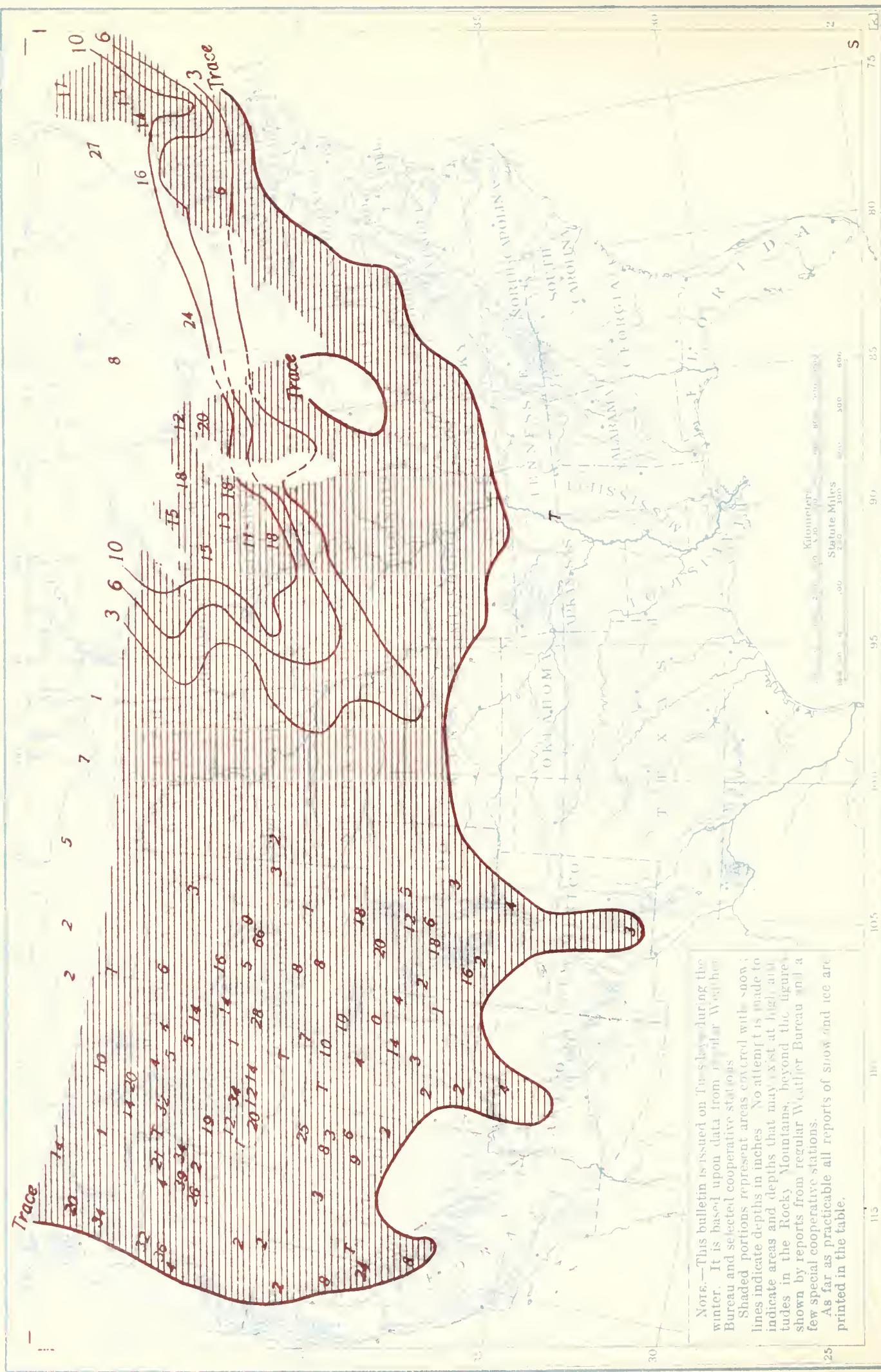
P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., JANUARY 14, 1924.

| Stations. | Snow. | Ice in rivers har- bors, etc. | Stations. | Snow. | Ice in rivers har- bors, etc. |
|-------------------------|----------------|--|------------------------|----------------|--|
| <i>Alaska.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Montana.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Eagle | 16 | ..... | Bozeman | 14 | ..... |
| Nome | 12 | ..... | Haugan | 20 | ..... |
| <i>Arizona.</i> | <i>.....</i> | <i>.....</i> | Helena | 4 | ..... |
| Grand Canyon | 4 | ..... | Kalispell | 10 | ..... |
| <i>California.</i> | <i>.....</i> | <i>.....</i> | Miles City | 3 | ..... |
| Inskip | 8 | ..... | Missoula | 4 | ..... |
| Summit | 24 | ..... | <i>Nebraska.</i> | <i>.....</i> | <i>.....</i> |
| Yosemite | 8 | ..... | Auburn | 4 | ..... |
| <i>Colorado.</i> | <i>.....</i> | <i>.....</i> | Lincoln | 3 | ..... |
| Dillon | 12 | ..... | Omaha | 5 | 13.5 |
| Pueblo | 3 | 0.0 | O'Neill | 3 | ..... |
| Rio | 16 | ..... | <i>Nevada.</i> | <i>.....</i> | <i>.....</i> |
| Steamboat Springs | 20 | ..... | Arthur | 6 | ..... |
| <i>Idaho.</i> | <i>.....</i> | <i>.....</i> | Elko | 3 | ..... |
| Hailey | 9 | ..... | Winnemucca | 3 | ..... |
| McCall | 19 | ..... | <i>New Hampshire.</i> | <i>.....</i> | <i>.....</i> |
| North Star Mine | 14 | ..... | Berlin | 4 | ..... |
| Vienna Mine | 34 | ..... | Concord | 8 | 5.0 |
| <i>Illinois.</i> | <i>.....</i> | <i>.....</i> | Hanover | 6 | ..... |
| New Burnside | 1 | ..... | Pittsburg | 14 | ..... |
| Peoria | T. | 4.0 | <i>New Mexico.</i> | <i>.....</i> | <i>.....</i> |
| <i>Indiana.</i> | <i>.....</i> | <i>.....</i> | Cloudcroft | 3 | ..... |
| Howe | 2 | ..... | <i>New York.</i> | <i>.....</i> | <i>.....</i> |
| Shoals | 2 | ..... | Beaver River | 6 | ..... |
| <i>Iowa.</i> | <i>.....</i> | <i>.....</i> | Lowville | 3 | ..... |
| Albia | 3 | ..... | Malone | 4 | ..... |
| Carroll | 6 | ..... | Oswego | 2 | 3.0 |
| Davenport | 1 | 10.0 | Saranac Lake | 4 | ..... |
| Dubuque | 4 | 10.0 | Watertown | 5 | ..... |
| Estherville | 5 | ..... | <i>North Dakota.</i> | <i>.....</i> | <i>.....</i> |
| Iowa Falls | 8 | ..... | Bismarck | T. | 18.0 |
| Keokuk | 1 | 6.0 | <i>Ohio.</i> | <i>.....</i> | <i>.....</i> |
| Pocahontas | 9 | ..... | Ashland | 1 | ..... |
| Sioux City | 2 | 11.5 | Sandusky | 0 | 5.5 |
| Waterloo | 5 | ..... | Zanesville | 2 | ..... |
| <i>Kansas.</i> | <i>.....</i> | <i>.....</i> | <i>Oregon.</i> | <i>.....</i> | <i>.....</i> |
| Concordia | 5 | ..... | Government Camp | 36 | ..... |
| Topeka | 2 | ..... | Imperial Mine | 39 | ..... |
| <i>Maine.</i> | <i>.....</i> | <i>.....</i> | Prairie City | 3 | ..... |
| Cornish | 11 | ..... | <i>Pennsylvania.</i> | <i>.....</i> | <i>.....</i> |
| Eastport | 4 | 0.0 | Erie | 2 | 4.0 |
| Gardiner | 8 | 7.0 | <i>South Dakota.</i> | <i>.....</i> | <i>.....</i> |
| Greenville | 13 | 11.0 | Huron | 1 | 17.0 |
| Portland | 7 | 0.0 | Pierre | 1 | 16.0 |
| Van Buren | 17 | ..... | Yankton | 4 | 13.0 |
| <i>Michigan.</i> | <i>.....</i> | <i>.....</i> | <i>Utah.</i> | <i>.....</i> | <i>.....</i> |
| Alpena | 12 | 5.0 | Logan | 10 | ..... |
| Big Rapids | 5 | ..... | Salt Lake City | 4 | ..... |
| Cadillac | 6 | ..... | Watson | 4 | ..... |
| Detroit | 0 | 4.0 | <i>Vermont.</i> | <i>.....</i> | <i>.....</i> |
| Escanaba | 10 | 10.0 | Brattleboro | 2 | 4.0 |
| Houghton | 15 | 8.0 | Northfield | 5 | ..... |
| Iron Mountain | 12 | ..... | <i>Washington.</i> | <i>.....</i> | <i>.....</i> |
| Mackinaw | 20 | ..... | Cascade Tunnel | 70 | ..... |
| Marquette | 18 | 1.0 | Laurier | 14 | ..... |
| Menominee | 18 | ..... | <i>Wisconsin.</i> | <i>.....</i> | <i>.....</i> |
| Port Huron | T. | 5.0 | Fond du Lac | 10 | ..... |
| Saginaw | 1 | 8.0 | Green Bay | 11 | 13.0 |
| Sault Ste. Marie | 12 | 9.0 | La Crosse | 13 | 9.0 |
| <i>Minnesota.</i> | <i>.....</i> | <i>.....</i> | Madison | 4 | ..... |
| Duluth | 5 | 17.0 | Medford | 13 | ..... |
| Moorhead | 8 | 17.0 | Park Falls | 15 | ..... |
| St. Paul | 9 | 8.5 | Wausau | 11 | 14.0 |
| <i>Missouri.</i> | <i>.....</i> | <i>.....</i> | <i>Wyoming.</i> | <i>.....</i> | <i>.....</i> |
| Brunswick | 4 | ..... | Alta | 28 | ..... |
| Hannibal | T. | 8.0 | Cody | 5 | ..... |
| Kansas City | 2 | * | Foxpark | 18 | ..... |
| Lamar | 3 | ..... | Sheridan | 9 | ..... |
| Poplar Bluff | 2 | ..... | South Pass City | 8 | ..... |
| Rolla | 2 | ..... | Yellowstone Park | 14 | ..... |

* Shore ice. † Floating ice. ‡ Ice gorged. § Measurement impracticable.
T. indicates trace.

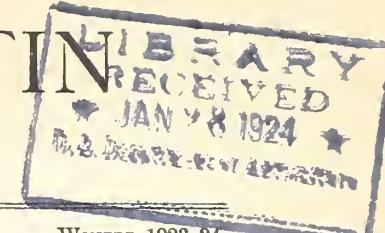
Depth of Snow on Ground, 8 p. m., January 14, 1924.



Note.—This bulletin is issued on days during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations. Shaded portions represent areas covered with snow. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figure shown by reports from regular Weather Bureau and a few special cooperative stations. As far as practicable all reports of snow and ice are printed in the table.

SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.



No. 7.

WASHINGTON, D. C., JANUARY 22, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The weather of the week just closed was typically winterish, and cyclonic and anticyclonic movements were vigorous and active.

At the beginning of the week a cold wave had appeared over the western Canadian Provinces and by Wednesday morning had advanced into the Northern Plains and upper Mississippi Valley. At the same time a storm of considerable intensity had advanced into the lower Ohio Valley and rain or snow had fallen over most of the country between the Great Plains and Appalachian Mountains, overspreading all eastern districts by Thursday morning. Following this cold weather advanced into the central and eastern districts, but this soon moderated somewhat under the influence of lower pressure moving into the central valleys. Cold weather still continued in the Northwest, and by Saturday morning it was again advancing into the central valleys. At 8 a.m., Sunday, high pressure dominated all western districts and colder weather had overspread the Mississippi Valley and Great Lakes region, extending during Monday into the Atlantic and Gulf States as the severest cold wave of the season to date. Freezing temperatures were reported from the Gulf States and portions of the Florida Peninsula.

DEPTH OF SNOW.

The snow-covered area remains substantially as shown on the last issue of this bulletin, and the depth of the cover was not materially increased, except from the middle Mississippi Valley northeastward over the Great Lakes where there is now from 3 to 9 inches more snow than was reported a week ago, and there were some material increases in the northern mountain districts from western Montana to Washington. Slight decreases in depth were reported from southern New England, locally in Iowa and the adjacent portions of Nebraska and Kansas, and generally over the southern Rocky Mountains and thence westward to the Sierra. In the mountains of California the snow-cover continues far less than normal and similar conditions exist in Arizona. Over other portions of the western mountain districts the accumulated snow more nearly approaches the normal conditions though in many sections the water content is comparatively small.

But little protection was afforded winter wheat over the Great Plains during the severe cold of the week just closed, but the northern portions of the belt to eastward had moderate protection, and winter wheat is reported as being well protected in most far northwestern districts.

ICE IN RIVERS AND HARBORS.

Cold weather during most of the week favored the formation of considerable additional ice over that reported a week ago, and small amounts are now present on some of the northern tributaries of the Ohio, which were free a week ago.

The Missouri is closed from Omaha northward, and shore ice is reported as far south as Kansas City. In the upper reaches the thickness now ranges up to two feet. In the upper Mississippi and its tributaries ice now ranges up to nearly 15 inches and conditions are favorable for harvesting. In the Great Lakes ice increased materially in practically all the harbors and now ranges from 2 to 7 inches on those of the lower Lakes to nearly 2 feet at the western end of Lake Superior.

In the interior of New England there was a considerable increase during the week and ice of good thickness is now available in localities favorable for its formation. No important amount of ice has yet formed on the Hudson and its main tributary, nor on the larger rivers to the southward.

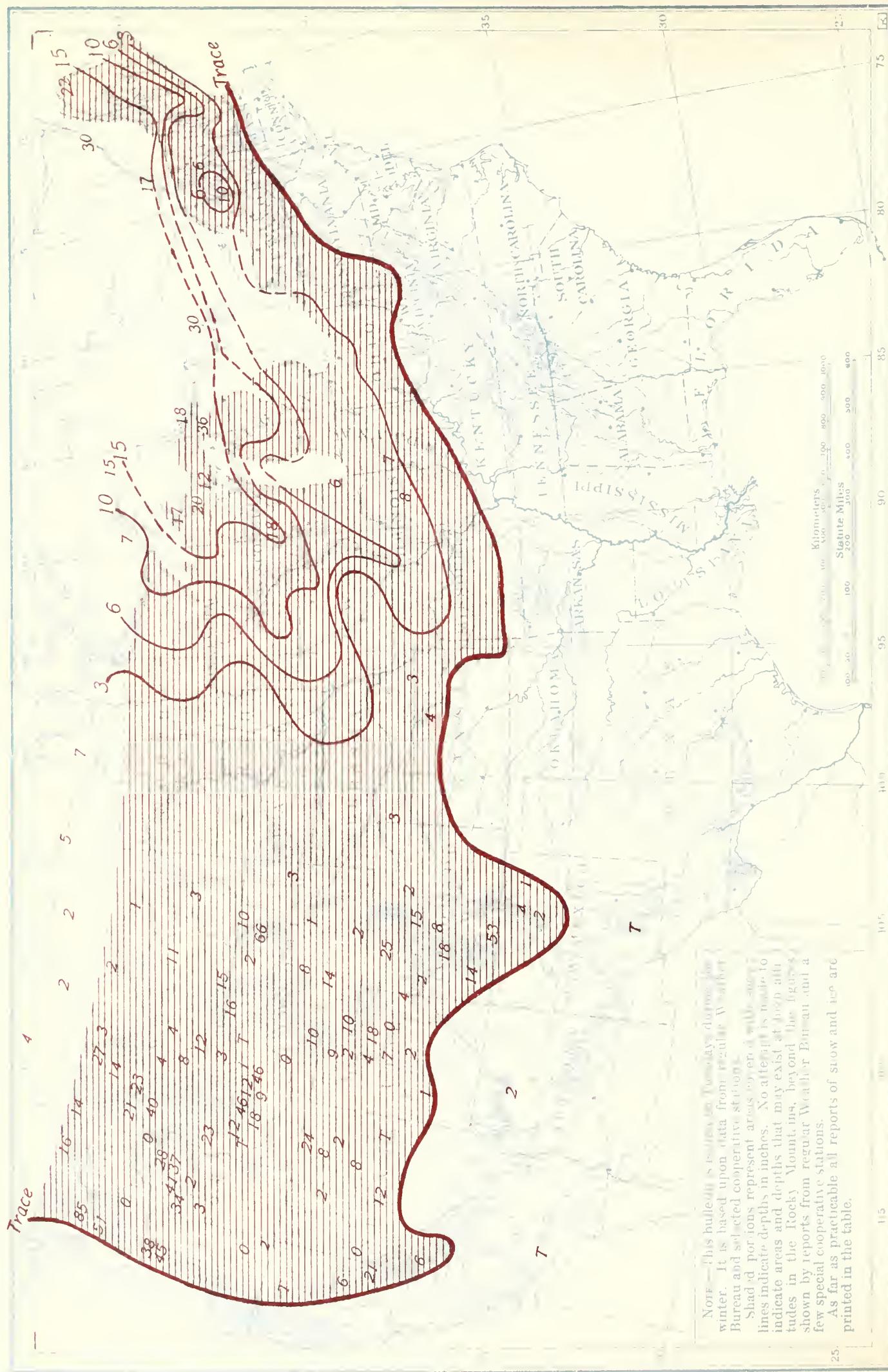
P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS. 8 P. M., JANUARY 21, 1924.

| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers, har- bors, etc. |
|-----------------------|----------------|---|-----------------------|----------------|---|
| <i>California.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Nebraska.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Sierraville..... | 6 | ..... | Auburn..... | 3 | ..... |
| Summit..... | 21 | ..... | Guide Rock..... | 2 | ..... |
| Yosemite..... | 6 | ..... | Imperial..... | 3 | ..... |
| <i>Colorado.</i> | | | Lincoln..... | 2 | ..... |
| Denver..... | 2 | ..... | Omaha..... | 3 | 16.0 |
| Grand Junction..... | 2 | ..... | <i>Nevada.</i> | | |
| <i>Idaho.</i> | | | Elko..... | 2 | ..... |
| Hailey..... | 9 | ..... | <i>New Hampshire.</i> | | |
| Idaho City..... | 12 | ..... | Berlin..... | 4 | ..... |
| McCall..... | 23 | ..... | Concord..... | 4 | 6.0 |
| Port Hill..... | 14 | ..... | Pittsburg..... | 16 | ..... |
| Soldier Creek..... | 18 | ..... | <i>New Mexico.</i> | | |
| Vienna Mine..... | 46 | ..... | Des Moines..... | 1 | ..... |
| <i>Illinois.</i> | | | Truchas..... | 2 | ..... |
| Chicago..... | 3 | ..... | <i>New York.</i> | | |
| Decatur..... | 8 | ..... | Beaver River..... | 8 | ..... |
| Peoria..... | 3 | 7.0 | Buffalo..... | 1 | 6.0 |
| Springfield..... | 5 | ..... | Canton..... | 3 | ..... |
| Walnut..... | 5 | ..... | Herkimer..... | 2 | ..... |
| <i>Indiana.</i> | | | Lowville..... | 10 | ..... |
| Royal Center..... | 4 | ..... | Oswego..... | 1 | † |
| Terre Haute..... | 2 | 4.0 | Rochester..... | 2 | 2.0 |
| <i>Iowa.</i> | | | Watertown..... | 4 | ..... |
| Carroll..... | 6 | ..... | <i>North Dakota.</i> | | |
| Charles City..... | 9 | ..... | Bismarck..... | T. | 20.0 |
| Davenport..... | 7 | 13.0 | Devils Lake..... | 2 | ..... |
| Des Moines..... | T. | 13.0 | Ellendale..... | 1 | ..... |
| Dubuque..... | 6 | 14.0 | <i>Ohio.</i> | | |
| Keokuk..... | 6 | 11.0 | Ashland..... | 4 | ..... |
| Sioux City..... | 1 | 16.0 | Cleveland..... | 3 | 4.0 |
| <i>Kansas.</i> | | | Marion..... | 2 | ..... |
| Concordia..... | 4 | ..... | Toledo..... | 4 | 7.5 |
| Smith Center..... | 1 | ..... | Wapakoneta..... | 4 | ..... |
| <i>Maine.</i> | | | <i>Oregon.</i> | | |
| Cornish..... | 10 | ..... | Government Camp..... | 45 | ..... |
| Gardiner..... | 4 | 7.0 | Hilgard..... | 6 | ..... |
| Greenville..... | 14 | 17.0 | Imperial Mine..... | 41 | ..... |
| Millinocket..... | 14 | ..... | Lakeview..... | 2 | ..... |
| Portland..... | 3 | 0.0 | <i>Pennsylvania.</i> | | |
| Van Buren..... | 22 | ..... | Erie..... | 4 | 6.0 |
| <i>Michigan.</i> | | | <i>South Dakota.</i> | | |
| Alpena..... | 13 | 8.0 | Huron..... | T. | 20.0 |
| Detroit..... | 3 | 7.0 | Pierre..... | T. | 17.0 |
| Escanaba..... | 13 | 18.0 | Yankton..... | 4 | 17.0 |
| Grand Rapids..... | 6 | ..... | <i>Utah.</i> | | |
| Grayling..... | 13 | ..... | Logan..... | 9 | ..... |
| Houghton..... | 17 | 8.0 | Provo..... | 7 | ..... |
| Marquette..... | 16 | 1.0 | Salt Lake City..... | 4 | ..... |
| Port Huron..... | 2 | 6.0 | Watson..... | 4 | ..... |
| Saginaw..... | 10 | 5.5 | <i>Vermont.</i> | | |
| Sault Ste. Marie..... | 18 | 12.0 | Northfield..... | 3 | ..... |
| <i>Minnesota.</i> | | | St. Johnsbury..... | 3 | ..... |
| Duluth..... | 5 | 20.5 | <i>Washington.</i> | | |
| Minneapolis..... | 8 | ..... | Cascade Tunnel..... | 85 | ..... |
| Moorhead..... | 3 | 24.0 | Laurier..... | 16 | ..... |
| <i>Missouri.</i> | | | Stampede..... | 51 | ..... |
| Brunswick..... | 8 | ..... | <i>Wisconsin.</i> | | |
| Columbia..... | 5 | ..... | Brodhead..... | 6 | ..... |
| Hannibal..... | 3 | 10.5 | Fond du Lac..... | 13 | ..... |
| Kansas City..... | 2 | * | Green Bay..... | 12 | 17.0 |
| Macon..... | 3 | ..... | La Crosse..... | 13 | 14.0 |
| St. Louis..... | 2 | 0.0 | Medford..... | 13 | ..... |
| <i>Montana.</i> | | | Park Falls..... | 16 | ..... |
| Belton..... | 27 | ..... | Rhineland..... | 13 | ..... |
| Browning..... | 3 | ..... | Wausau..... | 8 | 16.0 |
| Haugan..... | 33 | ..... | <i>Wyoming.</i> | | |
| Helena..... | 4 | ..... | Evanston..... | 10 | ..... |
| Miles City..... | 3 | ..... | Lander..... | 8 | ..... |
| Missoula..... | 4 | ..... | Sheridan..... | 10 | ..... |
| Red Lodge..... | 15 | ..... | Yellowstone Park..... | 16 | ..... |

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p. m., January 21, 1924.



Note.—This bulletin is based upon 10-day average for winter. It is based upon data from regular Weather Bureau and selected cooperative stations.

Shaded portions represent areas where no observations exist at present. The solid black lines indicate areas and depths that may exist at locations in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.

As far as practicable all reports of snow and ice are printed in the table.

| Statute Miles | Kilometers |
|---------------|------------|
| 0-100 | 0-161 |
| 100-200 | 161-322 |
| 200-300 | 322-483 |
| 300-400 | 483-644 |
| 400-500 | 644-805 |
| 500-600 | 805-966 |
| 600-700 | 966-1127 |
| 700-800 | 1127-1288 |
| 800-900 | 1288-1449 |
| 900-1000 | 1449-1610 |

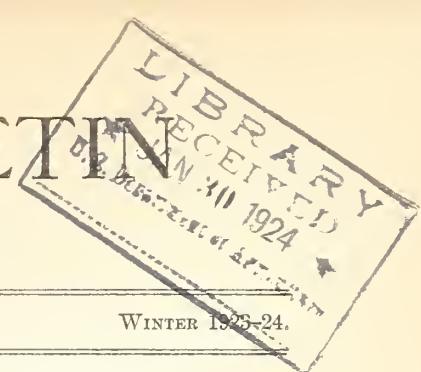
SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 8.

WASHINGTON, D. C., JANUARY 29, 1924.

WINTER 1923-24.



GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The week just closed might be termed typical of midwinter, particularly over the districts to eastward of the Rocky Mountains, where cyclonic and anticyclonic action was according to the usual winter schedule. In the far West high barometric pressure, extending well toward the coast, effectually barred the entrance of storm areas of importance from the North Pacific, and the week was unusually free from severe weather of any character.

The cold weather existing at the beginning of the week over the Southeastern States gave way rapidly under the influence of low pressure moving eastward from the central and northern districts, but this was quickly followed by colder weather that overspread the more northern districts, and by Friday morning severe cold had become established in the Missouri and upper Mississippi Valleys. At the same time storms of wide extent, with general precipitation, had moved to southern New England and to eastward of the upper Lakes, attended by high winds along the north Atlantic coast, snows from the upper Mississippi Valley eastward and rains to the southward. The cold area moved eastward during the last few days of the week, giving probably the lowest temperatures of the winter so far on Sunday morning in portions of New England.

The latter part of the week was mainly without material precipitation and at the close fair weather with moderate temperatures prevailed in practically all districts, save that severe cold weather continued in New England.

DEPTH OF SNOW.

Snow depths increased slightly from the Lake Superior region westward to the eastern slopes of the Rocky Mountains, and locally in northern Oregon, and at some of the high elevations of California. There was a moderate increase in northern Michigan and generally over northern New York, New England, and the adjacent portions of Canada, and smaller increases at points in the Appalachian Mountains as far south as western Maryland.

In practically all other districts where snow was reported a week ago, the depths are now appreciably less, the shrinkage amounting to 6 or 8 inches in northern Missouri and portions of adjacent States, and to somewhat less usually in the Rocky Mountain and Plateau districts, and locally in the Cascades of Washington and Oregon.

The snow-covered area as shown by the chart at the back remains substantially as reported a week ago, a small area in the Middle Plains region with a light covering last week now being uncovered, and small areas at the lower elevations of the Plateau region are now likewise free of snow. The notable feature of the snow situation is the continued absence of any material accumulation of snow in the mountains of central California. Much needed rains occurred during the latter part of the week at the lower elevations of the central and northern portions of the State, but there appears to have been little snow in the mountains.

ICE IN RIVERS AND HARBORS.

Increased thickness of ice was reported in practically all portions of the country where it has previously existed, though there was little extension southward.

Important increases were reported from many harbors of the Great Lakes and on the rivers and lakes of northern New York and generally in New England.

Harvest is now possible over most of the districts where ice is usually stored and operations are in progress generally over the northern districts under favorable weather conditions.

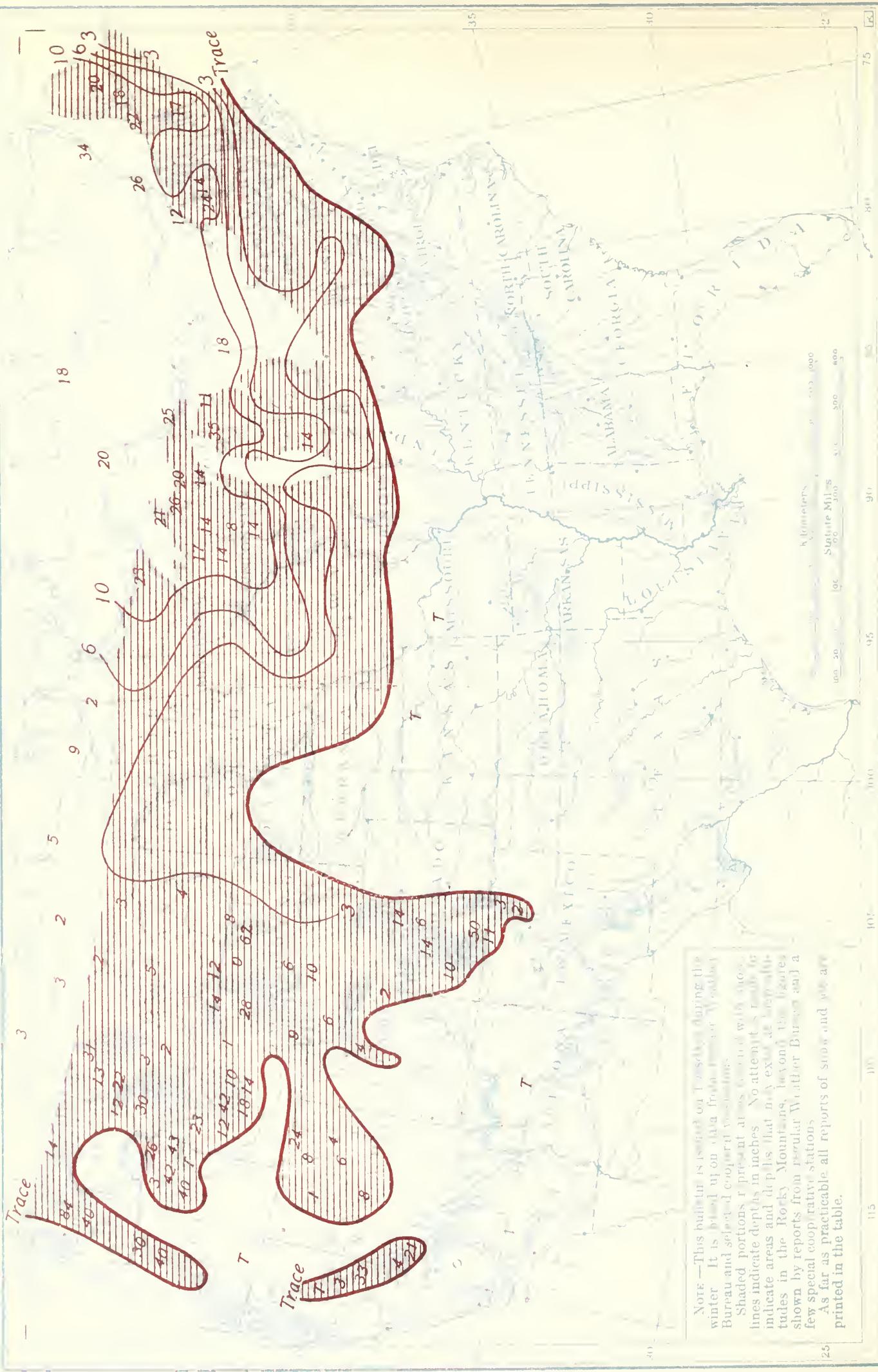
P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., JANUARY 28, 1924.

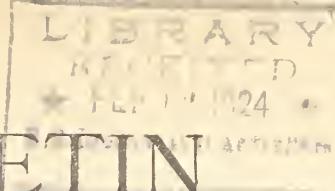
| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers, har- bors, etc. |
|-------------------------------|----------------|--------------------------------------|----------------------------|----------------|--------------------------------------|
| <i>California.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Nevada.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Huntington Lake | 21 | ..... | Arthur | 4 | ..... |
| Sierraville | 3 | ..... | Austin | 8 | ..... |
| Summit | 33 | ..... | North Fork | 8 | ..... |
| Yosemite | 4 | ..... | Winnemucca | 1 | ..... |
| <i>Colorado.</i> | | | <i>New Hampshire.</i> | | |
| Cumbres | 50 | ..... | Berlin | 10 | ..... |
| Grand Junction | 6 | ..... | Concord | 10 | 10.0 |
| Leadville | 6 | ..... | Durham | 14 | ..... |
| <i>Connecticut.</i> | | | <i>New Mexico.</i> | | |
| Hartford | T. | 3.0 | Chama | 11 | ..... |
| <i>Idaho.</i> | | | Taos | 2 | ..... |
| Ketchum | 10 | ..... | <i>New York.</i> | | |
| McCall | 23 | ..... | Albany | 2 | 5.0 |
| Soldier Creek | 18 | ..... | Beaver River | 14 | ..... |
| Vienna Mine | 42 | ..... | Buffalo | 1 | 8.0 |
| Wallace | 12 | ..... | Canton | 9 | ..... |
| <i>Illinois.</i> | | | Malone | 3 | ..... |
| Deacutur | 1 | ..... | Rochester | 3 | 5.5 |
| Peoria | 0 | 6.0 | Watertown | 8 | ..... |
| Walnut | 3 | ..... | <i>North Dakota.</i> | | |
| <i>Indiana.</i> | | | Bismarck | T. | 22.0 |
| Howe | 6 | ..... | Devils Lake | 3 | ..... |
| Marion | 8 | ..... | Williston | 1 | 25.5 |
| Wheatfield | 4 | ..... | <i>Ohio.</i> | | |
| <i>Iowa.</i> | | | Ashland | 2 | ..... |
| Charles City | 7 | ..... | Cleveland | 1 | 6.0 |
| Davenport | T. | 14.5 | Sandusky | 2 | 11.0 |
| Dubuque | 4 | 17.0 | Toledo | 1 | 12.0 |
| Estherville | 4 | ..... | Wapakoneta | 4 | ..... |
| Forest City | 5 | ..... | <i>Oregon.</i> | | |
| Pocahontas | 8 | ..... | Government Camp | 40 | ..... |
| Sioux City | T. | 20.0 | Hilgard | 3 | ..... |
| <i>Maine.</i> | | | Imperial Mine | 42 | ..... |
| Cornish | 17 | ..... | Sled Springs | 26 | ..... |
| Gardiner | 9 | 13.0 | <i>Pennsylvania.</i> | | |
| Greenville | 18 | 19.0 | Confluence | 2 | ..... |
| Millinocket | 20 | ..... | Erie | 3 | 10.0 |
| Portland | 8 | 0.0 | Huntingdon | 3 | ..... |
| <i>Massachusetts.</i> | | | Warren | 2 | ..... |
| Concord | 2 | ..... | <i>South Dakota.</i> | | |
| Holyoke | 4 | 4.0 | Huron | T. | 20.0 |
| <i>Michigan.</i> | | | Yankton | 1 | 17.5 |
| Alpena | 11 | 18.0 | <i>Utah.</i> | | |
| Battle Creek | 6 | ..... | Provo | 4 | ..... |
| Detroit | 1 | 10.0 | Watson | 2 | ..... |
| Escanaba | 14 | 17.5 | <i>Vermont.</i> | | |
| Grand Haven | 6 | ..... | Brattleboro | 8 | 9.5 |
| Grand Rapids | 6 | ..... | Burlington | 4 | 3.0 |
| Houghton | 21 | 8.5 | Northfield | 9 | ..... |
| Lansing | 3 | ..... | <i>Washington.</i> | | |
| Mancelona | 35 | ..... | Cascade Tunnel | 84 | ..... |
| Saginaw | 5 | 13.5 | Laurier | 14 | ..... |
| Sault Ste. Marie | 25 | 15.0 | <i>West Virginia.</i> | | |
| <i>Minnesota.</i> | | | Fairmont | 2 | ..... |
| Collegeville | 2 | ..... | Romney | 1 | ..... |
| Duluth | 5 | 22.5 | <i>Wisconsin.</i> | | |
| Ely | 28 | ..... | Fond du Lac | 14 | ..... |
| Grand Meadow | 7 | ..... | Green Bay | 9 | 19.0 |
| International Falls | 8 | ..... | La Crosse | 11 | 17.0 |
| Moorhead | 2 | 23.0 | Madison | 4 | ..... |
| St. Paul | 4 | 15.0 | Medford | 14 | ..... |
| Thief River Falls | 7 | ..... | Park Falls | 17 | ..... |
| <i>Montana.</i> | | | Wausau | 8 | 18.0 |
| Augusta | 31 | ..... | <i>Wyoming.</i> | | |
| Haugan | 22 | ..... | Alta | 28 | ..... |
| Hayre | 2 | ..... | Cheyenne | 6 | ..... |
| Kalispell | 18 | ..... | Evanston | 6 | ..... |
| Miles City | 4 | ..... | Lander | 6 | ..... |
| Missoula | 3 | ..... | Sheridan | 8 | ..... |
| Red Lodge | 12 | ..... | Yellowstone Park | 14 | ..... |

*Shore ice. † Floating ice. ‡ Ice gorged. § Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p. m., January 28, 1924.



Note.—This bulletin is issued on the basis of data furnished by the Weather Bureau and selected cooperative stations. Shaded portions represent areas covered with snow. Lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at elevations in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations. As far as practicable all reports of snow and water are printed in the table.



SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 9.

WASHINGTON, D. C., FEBRUARY 5, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The moderate winter weather existing over the greater part of the country at the close of the preceding week, as stated in the last issue of this bulletin, continued throughout the greater part of the week just closed. Only slight changes in temperature occurred on the whole until near the end of the week, when moderately cold weather overspread most northern districts from the Great Plains eastward, and at the close of the week it had become considerably colder in the central valleys and west Gulf States, but unusually warm weather still continued in the Southeastern States, and moderate temperatures were the rule in the far West.

The early part of the week was without important precipitation save in the extreme Northwest where rain persisted throughout the greater part of the week, though the amounts were mainly moderate, except along the immediate coast. By Sunday morning, however, a low pressure area of wide extent had developed over the lower Missouri Valley, and during the following 24 hours rain or snow occurred over considerable areas in the Great Plains, middle Mississippi Valley and portions of the Great Lakes, and at the close of the week the storm center had moved to Illinois and rain or snow was falling over the greater part of the country from the Mississippi River eastward. In portions of the Central Valleys the storm was attended by heavy sleet and local high winds, causing much damage to overhead wire systems and otherwise.

DEPTH OF SNOW.

Very little snow occurred during the week over the districts to eastward of the Rocky Mountains until near the close, when snow set in over a considerable area in the lower Missouri and upper Mississippi Valleys, and upper Lake region, continuing at the close of the week, the fall prior to the 8 p. m. observation of Monday being generally light, but after that time the amounts became quite heavy in portions of southern Wisconsin and probably in other nearby districts.

There were some increases in northern New England and at a few points in the mountains of Wyoming, Idaho, and eastern Oregon. Elsewhere as far as reports disclose there were general decreases, particularly along the entire northern border, and over most of the mountain and Plateau districts of the West.

The snow-covered area changed considerably as to location, but the total remains about as reported last week. A considerable area in the northern drainage of the Ohio and portions of the Appalachian Mountain region as far south as western Maryland showing a moderate covering last week is now bare, while the middle Plains, generally bare a week ago, now have a moderate cover.

ICE IN RIVERS AND HARBORS.

The moderate warmth of the greater part of the week prevented the formation of any material amount of new ice, except in central and northern New England, and favored the melting and breaking up of a considerable portion of that already accumulated over the southern districts where it had previously formed.

The most important changes occurred in the upper Mississippi River and its tributaries, where there was considerable breaking up and moving out. The Missouri River to northward of Omaha remains icebound and without material change as compared with a week ago, and only small changes occurred as a rule in the harbors of the Great Lakes, except in Lake Erie where there was considerable breaking up. In New England there was a moderate increase and harvesting began on the Connecticut River, and it is under way in favored localities in New York.

P. C. DAY,

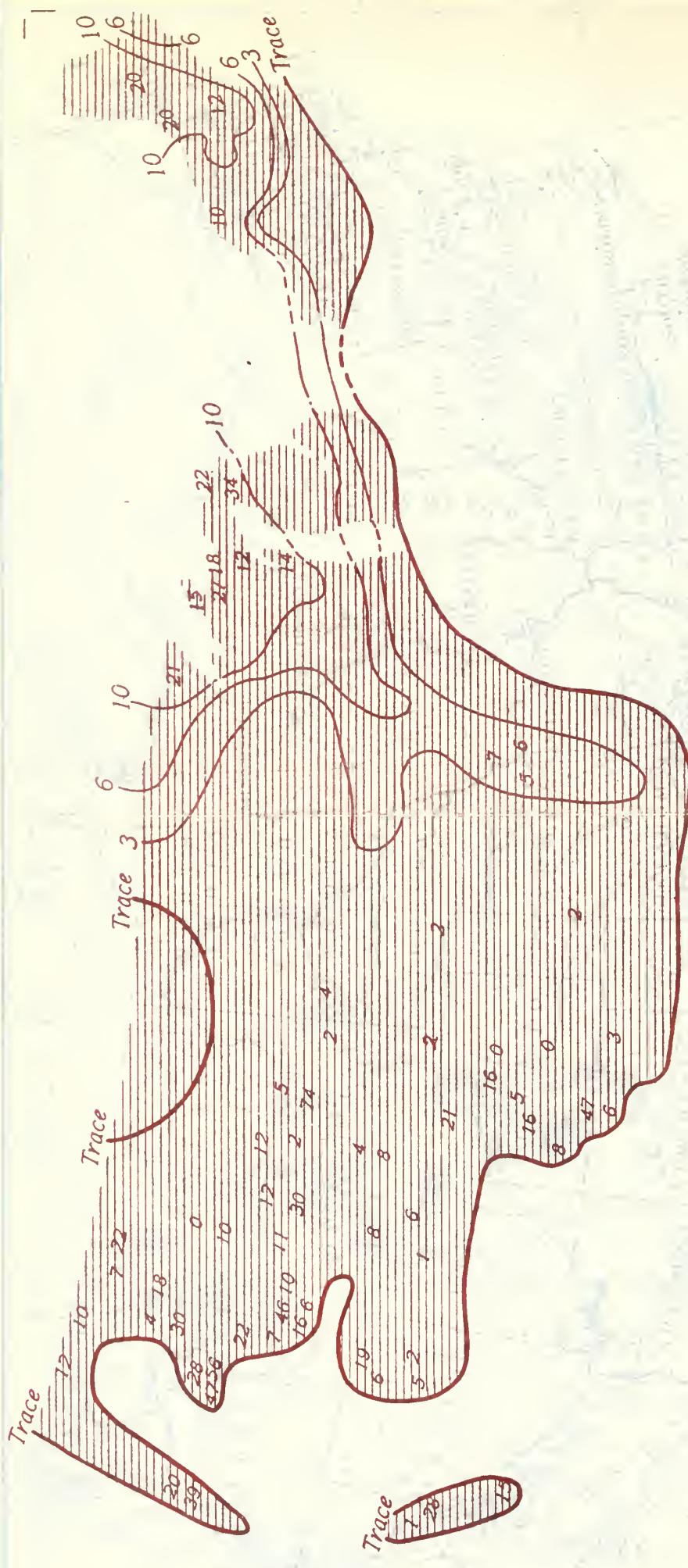
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., FEBRUARY 4, 1924.

| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers, har- bors, etc. |
|--------------------------|---------|---|-----------------------|---------|---|
| <i>Alaska.</i> | | | <i>New Hampshire.</i> | | |
| Cordova..... | 1..... | | Berlin..... | 8..... | |
| Eagle..... | 29..... | | Concord..... | 11..... | 14.0 |
| Noorvik..... | 17..... | | Durham..... | 16..... | |
| <i>California.</i> | | | Hanover..... | 7..... | |
| Huntington Lake | 15..... | | Keene..... | 4..... | |
| Sierraville..... | 1..... | | Pittsburg..... | 20..... | |
| Summit..... | 28..... | | <i>New Mexico.</i> | | |
| <i>Colorado.</i> | | | Chama..... | 6..... | |
| Cumbres..... | 47..... | | Des Moines..... | 3..... | |
| Dillon..... | 16..... | | <i>New York.</i> | | |
| Leadville..... | 5..... | | Albany..... | 1..... | 5.0 |
| Rico..... | 8..... | | Buffalo..... | 3..... | 8.0 |
| Steamboat Springs..... | 21..... | | Canton..... | 4..... | |
| <i>Connecticut.</i> | | | Herkimer..... | 2..... | |
| Hartford..... | T. 6.0 | | Malone..... | 3..... | |
| West Cornwall..... | 2..... | | Ogdensburg..... | 10..... | |
| <i>Illinois.</i> | | | Oswego..... | 9..... | 8.0 |
| Chicago..... | 2..... | | Plattsburg..... | 3..... | |
| <i>Iowa.</i> | | | Poughkeepsie..... | 1..... | |
| Davenport..... | 1..... | 12.0 | Rochester..... | 5..... | 6.5 |
| Dubuque..... | 2..... | 18.0 | Saranac Lake..... | 8..... | |
| Sioux City..... | 2..... | 15.5 | Syracuse..... | 1..... | |
| <i>Kansas.</i> | | | <i>North Dakota.</i> | | |
| Concordia..... | 1..... | | Bismarck..... | T. 22.0 | |
| Dodge City..... | 2..... | | Williston..... | 0 25.5 | |
| Topeka..... | 5..... | | <i>Ohio.</i> | | |
| Wichita..... | 1..... | | Cleveland..... | 0 7.0 | |
| <i>Maine.</i> | | | Sandusky..... | 0 7.0 | |
| Cornish..... | 12..... | | <i>Oklahoma.</i> | | |
| Gardiner..... | 9..... | 12.0 | Broken Arrow..... | 3..... | |
| Greenville..... | 20..... | 20.0 | Oklahoma City..... | T. | |
| Portland..... | 8..... | 0.0 | <i>Oregon.</i> | | |
| <i>Massachusetts.</i> | | | Government Camp..... | 39..... | |
| Boston..... | 2..... | 0.0 | Imperial Mine..... | 47..... | |
| Holyoke..... | 2..... | 6.0 | Sled Springs..... | 28..... | |
| Williamstown..... | 2..... | | Wallowa..... | 2..... | |
| <i>Michigan.</i> | | | <i>South Dakota.</i> | | |
| Alpena..... | 6..... | 12.0 | Huron..... | 1..... | 20.0 |
| Detroit..... | T. 7.0 | | Pierre..... | 1..... | 19.0 |
| Escanaba..... | 12..... | 18.0 | Rapid City..... | 4..... | |
| Houghton..... | 15..... | 10.0 | Yankton..... | 4..... | 18.0 |
| Marquette..... | 18..... | 1.5 | <i>Utah.</i> | | |
| Sault Ste. Marie..... | 22..... | 15.5 | Salt Lake City..... | 1..... | |
| <i>Minnesota.</i> | | | <i>Vermont.</i> | | |
| Duluth..... | 4..... | 23.0 | Brattleboro..... | 5..... | 10.0 |
| Ely..... | 21..... | | Burlington..... | 3..... | 6.0 |
| Grand Meadow..... | 3..... | | St. Johnsbury..... | 8..... | |
| International Falls..... | 6..... | | <i>Washington.</i> | | |
| Leech Lake Dam..... | 4..... | | Laurier..... | 12..... | |
| Moorhead..... | T. 22.5 | | <i>Wisconsin.</i> | | |
| Roseau..... | 6..... | | Green Bay..... | 9..... | 22.5 |
| St. Paul..... | 1..... | * | La Crosse..... | 6..... | 18.0 |
| Thief River Falls..... | 7..... | | Madison..... | 3..... | |
| <i>Missouri.</i> | | | Medford..... | 9..... | |
| Kansas City..... | 6..... | 0.0 | Milwaukee..... | 6..... | |
| St. Joseph..... | 7..... | | Park Falls..... | 14..... | |
| Springfield..... | 1..... | | Rhineland..... | 16..... | |
| <i>Montana.</i> | | | Wausau..... | 8..... | 17.0 |
| Belton..... | 22..... | | <i>Wyoming.</i> | | |
| Haugan..... | 18..... | | Alta..... | 30..... | |
| Kalispell..... | 7..... | | Cheyenne..... | 2..... | |
| Red Lodge..... | 12..... | | Cody..... | 2..... | |
| <i>Nebraska.</i> | | | Dome Lake..... | 74..... | |
| North Platte..... | 2..... | | Evanston..... | 6..... | |
| <i>Nevada.</i> | | | Lander..... | 4..... | |
| Arthur..... | 2..... | | Newcastle..... | 2..... | |
| Gold Creek..... | 19..... | | Sheridan..... | 5..... | |
| Hylton..... | 5..... | | South Pass City..... | 8..... | |
| North Fork..... | 6..... | | Yellowstone Park..... | 12..... | |

* Shore ice. † Floating ice. ‡ Ice gorged. § Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p. m., February 4, 1924.



Note.—This bulletin is based on data collected during the winter of 1923-1924. Data from the U. S. Weather Bureau and the U. S. Geographical Survey are used. Shaded portion represents areas covered after contour lines indicate depth of snow. See legend. Elevation in feet above sea level is given in parentheses. The elevations in the Henry Mountains, belonging to a range shown by reports from Franklin W. Allen, Thomas A. few special cooperative stations.

As far as practicable all stations of 2000 feet elevation are printed in the table.

SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 10.

WASHINGTON, D. C., FEBRUARY 12, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The storm referred to in the last issue of this bulletin as central over Illinois moved northeastward to the Lake region by Wednesday morning, attended by high winds, drifting snow, sleet and rain. In the vicinity of Lake Michigan it was one of the severest storms in many years, and it was generally severe throughout the upper Mississippi Valley and to the eastward over the lower Lakes. Considerable snow fell over the northern districts, heavy sleet caused much local damage to overhead wire systems and snow drifts greatly delayed transportation operations, particularly in the more western portions of the storm area. During the eastward progress of this storm general precipitation occurred over nearly all districts from the Mississippi River eastward to the Atlantic coast, though the falls were usually comparatively light.

During the middle and latter portions of the week there was mainly but little precipitation, except for light snows during Sunday and Monday from the upper Mississippi Valley eastward to New England. In the far West there was scattered precipitation throughout the week, some heavy falls occurring in central and northern California about the middle and later in the week heavy rains occurred in the far Northwest.

DEPTH OF SNOW.

The storm of the early part of the week gave a considerable body of snow from the Great Lakes eastward, the increased depths now reported ranging up to nearly 10 inches over portions of the Northern States. On the other hand, material decreases, due to melting, occurred from the upper Mississippi Valley westward to the Rocky Mountains, and the considerable covering over that region present at the beginning of the week had practically disappeared by the end.

In the western mountain districts there were few important changes, and the depths now reported are practically as existed a week ago.

The total snow-covered area, as compared with the previous week, did not change materially, though a considerable area embracing portions of the Ohio and middle Mississippi Valleys, and Middle Atlantic States, bare a week ago, now has a moderate covering, while a similar area of the middle and northern Plains, with a cover of several inches last week, is now bare.

In the western mountain regions the lower elevations are now mostly bare and ranges are largely available for pasturage.

In California there was considerable rain at the lower levels of the northern and central districts, but snowfall, usually heavy in the mountains on such occasions, was mainly light, and the amounts now stored in the high ranges of the Sierra Nevada are far less than usual at this period of the winter.

ICE IN RIVERS AND HARBORS.

Moderate weather during the greater part of the week over the districts where ice had previously formed prevented any material change in the conditions reported a week ago.

The most important increases occurred in New England, where they ranged up to 4 inches, and locally on the harbors of the Great Lakes the increases were of similar proportions.

Ice harvest is in progress in New England, but in New York there is a general shortage of ice so far on the rivers, though ice on ponds is reported up to 12 inches in thickness. In general the weather of the week was favorable for harvesting in the districts where the ice was of sufficient thickness to permit of this work.

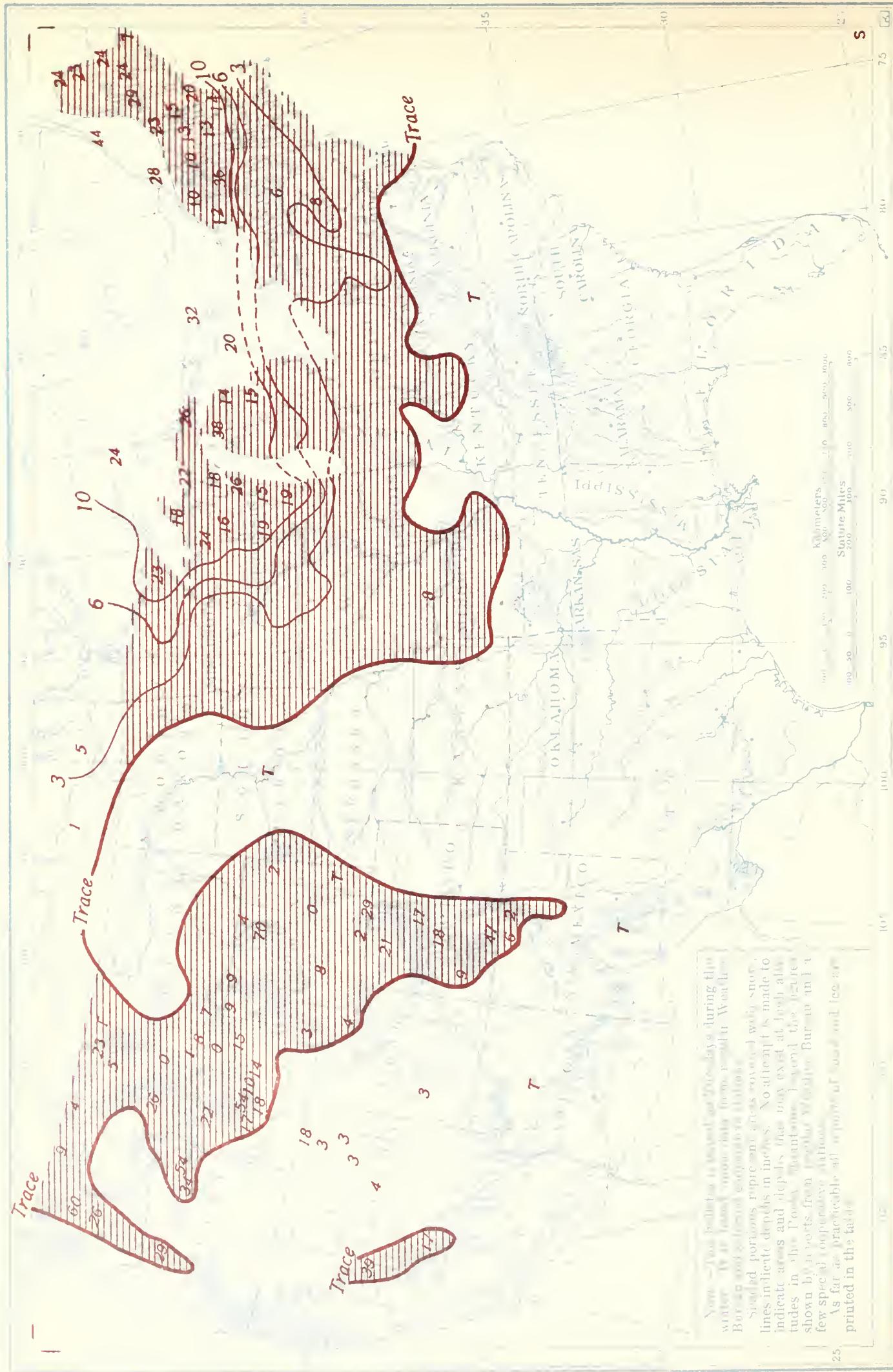
P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., FEBRUARY 11, 1924.

| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers, har- bors, etc. |
|-----------------------------|-------|--------------------------------------|----------------------------|-------|--------------------------------------|
| <i>California.</i> | | | <i>Nevada.</i> | | |
| Huntington Lake . . . | 17 | ..... | Arthur | 3 | ..... |
| Summit | 39 | ..... | Austin | 4 | ..... |
| <i>Colorado.</i> | | | <i>New Hampshire.</i> | | |
| Cumbres | 47 | ..... | Concord | 11 | 18.0 |
| Dillon | 17 | ..... | Durham | 14 | ..... |
| Rico | 9 | ..... | Hanover | 13 | ..... |
| Steamboat Springs . . . | 21 | ..... | Pittsburg | 23 | ..... |
| <i>Connecticut.</i> | | | <i>New Mexico.</i> | | |
| Hartford | 3 | 6.5 | Chama | 6 | ..... |
| New Haven | 2 | 0.0 | Tres Piedras | 2 | ..... |
| West Cornwall | 4 | ..... | <i>New York.</i> | | |
| <i>Idaho.</i> | | | Albany | 2 | 7.0 |
| Idaho City | 6 | ..... | Binghamton | 6 | ..... |
| Ketchum | 10 | ..... | Buffalo | 5 | 8.0 |
| McCall | 22 | ..... | Canton | 10 | ..... |
| Spencer | 15 | ..... | Cutchogue | 1 | ..... |
| Vienna Mine | 54 | ..... | Herkimer | 2 | ..... |
| <i>Indiana.</i> | | | Ithaca | 3 | ..... |
| Fort Wayne | 2 | ..... | Oswego | 10 | 8.0 |
| Howe | 5 | ..... | Rochester | 6 | 7.0 |
| Indianapolis | 2 | ..... | Warwick | 4 | ..... |
| Notre Dame | 2 | ..... | Watertown | 12 | ..... |
| Terre Haute | T. | † | <i>Ohio.</i> | | |
| <i>Iowa.</i> | | | Ashland | 3 | ..... |
| Des Moines | 2 | 14.0 | Cincinnati | 1 | 0.0 |
| Dubuque | 1 | 18.0 | Cleveland | 2 | 4.5 |
| Estherville | 2 | ..... | Sandusky | 1 | 7.0 |
| Iowa City | 2 | ..... | Toledo | 2 | 12.0 |
| Sioux City | T. | 17.5 | Wapakoneta | 1 | ..... |
| Waterloo | 4 | ..... | Zanesville | 1 | ..... |
| <i>Kentucky.</i> | | | <i>Oregon.</i> | | |
| Lexington | 1 | ..... | Government Camp | 29 | ..... |
| Maysville | 1 | ..... | Imperial Mine | 54 | ..... |
| <i>Maine.</i> | | | <i>Pennsylvania.</i> | | |
| Greenville | 29 | 23.0 | Erie | 1 | 12.0 |
| Millinocket | 24 | ..... | Franklin | 4 | ..... |
| Portland | 20 | 0.0 | Gettysburg | 2 | ..... |
| Van Buren | 24 | ..... | Greensboro | 3 | ..... |
| <i>Massachusetts.</i> | | | Harrisburg | 1 | † |
| Amherst | 4 | ..... | Huntingdon | 2 | ..... |
| Boston | 3 | 0.0 | Mifflintown | 4 | ..... |
| <i>Michigan.</i> | | | Pittsburgh | 1 | 0.0 |
| Alpena | 14 | 16.0 | Scranton | 3 | ..... |
| Battle Creek | 4 | ..... | Warren | 4 | ..... |
| Detroit | 4 | 10.0 | <i>South Dakota.</i> | | |
| Grand Haven | 6 | ..... | Huron | T. | 21.0 |
| Houghton | 18 | 11.5 | Pierre | T. | 20.0 |
| Ironwood | 24 | ..... | <i>Vermont.</i> | | |
| Lansing | 4 | ..... | Brattleboro | 5 | 12.0 |
| Ludington | 10 | ..... | Burlington | 10 | 9.0 |
| Menominee | 26 | ..... | Northfield | 12 | ..... |
| Saginaw | 11 | 13.0 | St. Johnsbury | 13 | ..... |
| Sault Ste. Marie | 26 | 16.5 | <i>Washington.</i> | | |
| <i>Minnesota.</i> | | | Cascade Tunnel | 60 | ..... |
| Duluth | 3 | 24.0 | Laurier | 9 | ..... |
| Grand Meadow | 4 | ..... | <i>Wisconsin.</i> | | |
| Moorhead | T. | 28.5 | Eau Claire | 10 | ..... |
| Roseau | 5 | ..... | Fond du Lac | 19 | ..... |
| St. Paul | 1 | * | Green Bay | 15 | 23.0 |
| Thief River Falls | 3 | ..... | Madison | 3 | ..... |
| <i>Missouri.</i> | | | Milwaukee | 12 | ..... |
| Arcadia | 3 | ..... | Rhinelander | 16 | ..... |
| Hannibal | T. | *† | Wausau | 9 | 17.0 |
| Maryville | 4 | ..... | <i>Wyoming.</i> | | |
| Rolla | 2 | ..... | Dome Lake | 70 | ..... |
| <i>Montana.</i> | | | Evanston | 4 | ..... |
| Belton | 23 | ..... | Foxpark | 29 | ..... |
| Bozeman | 7 | ..... | Newcastle | 2 | ..... |
| Kalispell | 5 | ..... | South Pass City | 8 | ..... |
| Red Lodge | 9 | ..... | Yellowstone Park | 9 | ..... |

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p. m., February 11, 1924.



NOTE.—This bulletin is issued at 12 noon Eastern Standard Time during the winter. It contains more data from points in West Virginia than from other sections of the country because it is there that most of the snow is found. Solid portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at elevations in the mountains, except the figure shown below from the Weather Bureau in Atlanta, Georgia. Bur. of the Census figures for the few special cooperative stations are given in the table.

As far as practicable all figures were taken from the tables printed in the tables.

25

SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 11.

WASHINGTON, D. C., FEBRUARY 19, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The weather of the week just closed was on the whole within moderate limits, and no important variations from the conditions usually expected at this period of the winter were experienced.

At the beginning a disturbance moving eastward caused light snow over the Lake region and portions of the Ohio Valley and to the northeastward, but this disappeared before reaching the New England coast. At the same time decidedly warm weather for the locality and season prevailed in the northern Plains and adjacent Canadian Provinces. By the middle of the week, however, an anticyclone of considerable proportions had moved into the upper Mississippi Valley and adjacent regions and temperatures of zero or slightly lower were reported from North Dakota eastward to Lake Superior. This cold area gradually overspread the more northern districts from the Great Lakes eastward, but did not materially affect the States to the southward. In the meantime cyclonic activity had developed in the Southwest and by Sunday snow or rain, mostly light, had overspread much of the country from the middle Great Plains eastward to the Ohio Valley. This disturbance lost force and dissipated before reaching the Atlantic coast, but gave rain, snow, or sleet over considerable areas from the middle Mississippi Valley eastward to the coast. In the far West some heavy rains occurred over the coast districts of Washington at the beginning, but thereafter there was little stormy weather except for light precipitation occasionally along the immediate coast.

DEPTH OF SNOW.

Increased depths of snow over those reported a week ago occurred in small areas only and these were mainly in the Missouri Valley and over Pennsylvania and New York. No increases were reported in the districts to westward of the Rocky Mountains. Slight decreases were general over most of Iowa and Minnesota and thence eastward to the upper Lakes, over northern New York, and generally in New England. In the far West the amounts as compared with those reported a week ago were nearly everywhere less though the decreases were mainly small.

The snow-covered area was not materially reduced in the districts to eastward of the Rocky Mountains although some changes occurred. These were mainly in the Missouri Valley, which was largely free of snow a week ago, but now has a slight cover, and in the middle Mississippi and Ohio Valleys, lightly covered at the beginning of the week, but bare at the end.

The week was remarkably free from snow over the mountain States, particularly in the far West where but little snow has fallen for a number of weeks and the stock of snow in the high ranges continues far less than is usually expected at this period of the winter.

ICE IN RIVERS AND HARBORS.

The moderately low temperatures prevailing during much of the week over the northern districts from the Great Lakes eastward caused general increases in ice thickness over the streams and lakes of those regions, but elsewhere little if any new ice formed and on the Missouri from Bismarck southward there were slight decreases. Likewise on the upper Mississippi and its tributaries there were usually either no changes or slight decreases.

The weather continues favorable for ice harvest and this work was under way and making good progress in the regions where large quantities of ice are commercially stored.

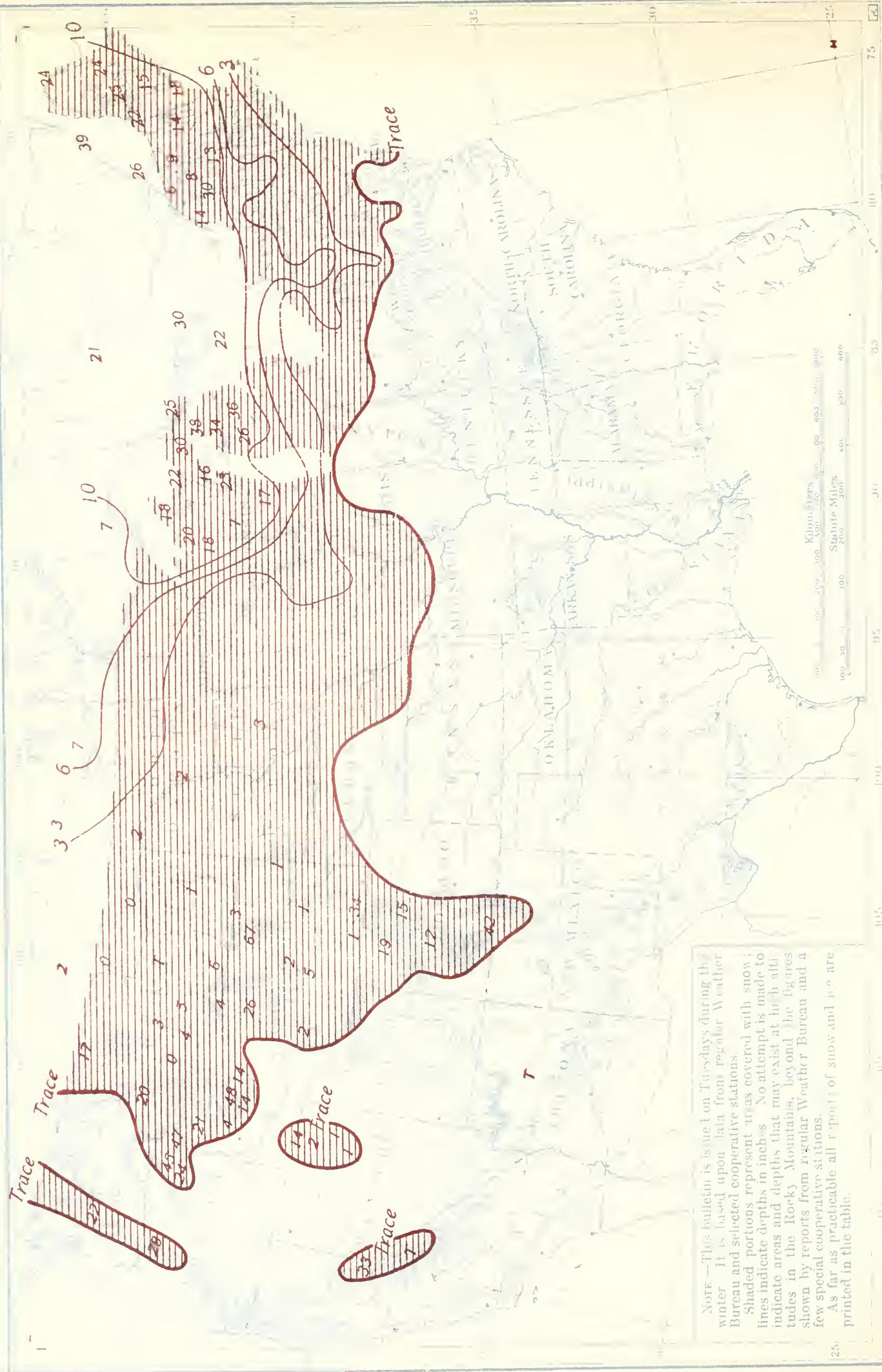
P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., FEBRUARY 18, 1924.

| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers, har- bors, etc. |
|-----------------------|----------------|--------------------------------------|-----------------------|----------------|--------------------------------------|
| <i>Colorado.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>New York.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Cumbres | 42 | ..... | Albany | 2 | 9.0 |
| Dillon | 15 | ..... | Beaver River | 30 | ..... |
| Steamboat Springs | 19 | ..... | Binghamton | 5 | ..... |
| <i>Idaho.</i> | | | Buffalo | 8 | 5.5 |
| Idaho City | 4 | ..... | Fredonia | 4 | ..... |
| McCall | 21 | ..... | Ithaca | 4 | ..... |
| Soldier Creek | 16 | ..... | Malone | 6 | ..... |
| Vienna Mine | 48 | ..... | Ogdensburg | 13 | ..... |
| <i>Illinois.</i> | | | Plattsburg | 10 | ..... |
| Peoria | T. | 3.5 | Poughkeepsie | 6 | ..... |
| Walnut | 2 | ..... | Rochester | 10 | 9.0 |
| Waukegan | 4 | ..... | Saranac Lake | 8 | ..... |
| <i>Iowa.</i> | | | Syracuse | 4 | ..... |
| Charles City | 3 | ..... | <i>North Dakota.</i> | | |
| Davenport | T. | 9.5 | Bismarck | 2 | 20.0 |
| Dubuque | 2 | 18.0 | Devils Lake | 4 | ..... |
| Sioux City | 1 | 16.5 | Williston | 2 | ? |
| Waterloo | 3 | ..... | <i>Ohio.</i> | | |
| <i>Maine.</i> | | | Ashland | 3 | ..... |
| Cornish | 17 | ..... | Cleveland | 1 | 5.5 |
| Eastport | 7 | 0.0 | Sandusky | 2 | 8.5 |
| Gardiner | 15 | 17.0 | Tiffin | 2 | ..... |
| Greenville | 25 | 24.0 | Toledo | 2 | 12.0 |
| Millinocket | 24 | ..... | <i>Oregon.</i> | | |
| Portland | 18 | 0.0 | Baker Mine | 47 | ..... |
| <i>Massachusetts.</i> | | | Government Camp | 28 | ..... |
| Boston | 2 | 0.0 | Imperial Mine | 45 | ..... |
| Holyoke | 2 | 18.0 | <i>Pennsylvania.</i> | | |
| Williamstown | 5 | ..... | Beaver Falls | 1 | ..... |
| <i>Michigan.</i> | | | Confluence | 1 | ..... |
| Alpena | 12 | 18.0 | Emporium | 3 | ..... |
| Big Rapids | 10 | ..... | Erie | 1 | 13.0 |
| Cadillac | 26 | ..... | Franklin | 5 | ..... |
| Detroit | 2 | 12.0 | Greensboro | 1 | ..... |
| Escanaba | 16 | 18.0 | Harrisburg | T. | ? |
| Grand Rapids | 3 | ..... | Johnstown | 7 | ..... |
| Houghton | 18 | 13.0 | Mifflintown | 3 | ..... |
| Ironwood | 20 | ..... | Scranton | 2 | ..... |
| Ludington | 6 | ..... | Towanda | 4 | ..... |
| Menominee | 23 | ..... | Williamsport | 3 | ..... |
| Newberry | 30 | ..... | <i>Rhode Island.</i> | | |
| Port Huron | 4 | 10.0 | Block Island | 1 | 0.0 |
| Saginaw | 9 | 12.0 | Kingston | 1 | ..... |
| Sault Ste. Marie | 25 | 16.5 | <i>South Dakota.</i> | | |
| <i>Minnesota.</i> | | | Huron | 3 | 18.0 |
| Duluth | 5 | 24.5 | Pierre | T. | 20.0 |
| Ely | 13 | ..... | Yankton | 2 | 16.0 |
| Grand Meadow | 2 | ..... | <i>Vermont.</i> | | |
| Leech Lake Dam | 5 | ..... | Brattleboro | 5 | 13.0 |
| Moorhead | 1 | 28.5 | Burlington | 9 | 11.5 |
| Roseau | 8 | ..... | Northfield | 10 | ..... |
| <i>Montana.</i> | | | St. Johnsbury | 12 | ..... |
| Belton | 17 | ..... | <i>West Virginia.</i> | | |
| Helena | 3 | ..... | Bayard | 7 | ..... |
| Red Lodge | 6 | ..... | Fairmont | 2 | ..... |
| <i>Nebraska.</i> | | | Rowlesburg | 2 | ..... |
| Auburn | 1 | ..... | <i>Wisconsin.</i> | | |
| Columbus | 1 | ..... | Green Bay | 12 | 23.0 |
| Lincoln | 1 | ..... | La Crosse | 2 | 19.0 |
| Tekamah | 2 | ..... | Madison | 2 | ..... |
| <i>New Hampshire.</i> | | | Medford | 12 | ..... |
| Berlin | 13 | ..... | Milwaukee | 8 | ..... |
| Concord | 10 | 18.0 | Park Falls | 18 | ..... |
| Pittsburg | 22 | ..... | Wausau | 7 | 16.0 |
| <i>New Jersey.</i> | | | <i>Wyoming.</i> | | |
| Atlantic City | 2 | ..... | Alta | 26 | ..... |
| Elizabeth | 1 | ..... | Foxpark | 34 | ..... |
| Lakewood | 5 | ..... | Sheridan | 3 | ..... |
| Sandy Hook | 2 | 0.0 | South Pass City | 5 | ..... |
| | | | Yellowstone Park | 4 | ..... |

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p.m., February 18, 1924.



Note.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations. Shaded portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at higher altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations. As far as practicable all reports of snow and ice are printed in the table.

SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 12.

WASHINGTON, D. C., FEBRUARY 26, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

At the beginning of the week cyclonic conditions had developed over the lower Mississippi Valley and rain or snow was falling over wide areas from the Texas coast northeastward to the Middle Atlantic States and thence northwestward to the northern Rocky Mountain region. By Wednesday morning the storm had advanced into the Northeastern States and rains or snows had overspread practically the entire country from the Mississippi Valley eastward, and westward into the Missouri Valley, continuing during the following 24 hours over the northeastern districts.

Over portions of the Northeastern States the snowfall was the heaviest of the season to date, and in the more inland districts the storm assumed a near blizzard character, drifting the snow badly and greatly interfering with traffic of all kinds, while farther south heavy ice forming on trees and overhead wires caused much damage and interrupted communications.

During the remainder of the week precipitation was scattered but usually light, although at the end stormy conditions prevailed over most eastern districts and snow was falling in portions of the Middle Atlantic States and rain to the southward. In the far West precipitation continued light and scattered, as has been the case for a number of weeks. Temperature conditions were not unusual for the season.

DEPTH OF SNOW.

Compared with the preceding week there has been a general increase in the snow depth over all northern districts from the Atlantic to the Pacific save in portions of the upper Lake region and along the coast of southern New England and the coast districts of New York and New Jersey. From the upper Potomac Valley northeastward to New England there was a general increase in the snow depths, ranging up to as much as 20 inches in the Adirondack Mountains, and to less amounts over surrounding areas. Also in Iowa and portions of the Missouri Valley and adjoining States the increases were general but somewhat less, and slight increases occurred in the mountain regions from Colorado northwestward to portions of Oregon and Washington. Considerable snow fell in western Kansas and some adjoining areas early in the week, but had melted by the end, and light amounts occurred at the end of the week in central Texas. A considerable area in the lower Ohio Valley, bare a week ago, now has a light cover, and a slight extension southward, as compared with last week, is reported in the mountain regions of New Mexico.

In the mountains of California, Nevada, and western Oregon the snow depths diminished during the week, at some points as much as 20 inches, though probably by settling rather than otherwise. The absence of any material snow in the mountains of California is assuming increasing interest.

ICE IN RIVERS AND HARBORS.

No important changes were reported in the ice conditions as compared with the preceding week, though on the whole there were general increases of a few inches over the northern districts.

Ice of good thickness is now available for harvest in most districts where commercial quantities are gathered, but in some sections it is reported but few of the larger plants will operate on account of labor costs.

The usual bulletin giving detailed information concerning ice conditions on the Great Lakes will be resumed from the Detroit office of the Weather Bureau beginning March 4.

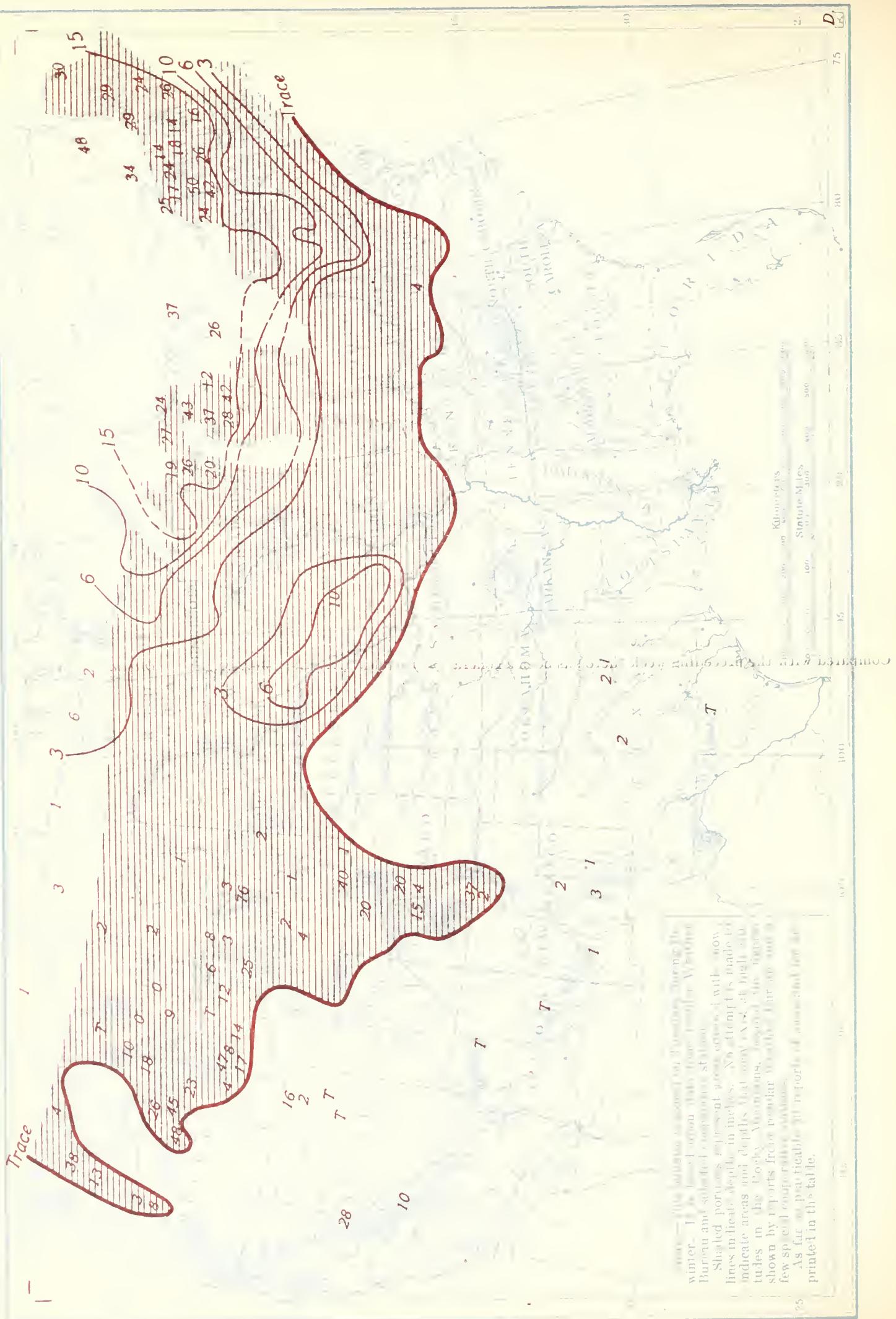
P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., FEBRUARY 25, 1924.

| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers har- bors, etc. |
|-----------------------------|----------------|--------------------------------------|----------------------------|----------------|-------------------------------------|
| <i>California.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>New Mexico.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Huntington Lake | 10 | ..... | Chama | 2 | ..... |
| Summit | 28 | ..... | Cloudcroft | 3 | ..... |
| <i>Colorado.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>New York.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Cumbres | 37 | ..... | Albany | 6 | 11.0 |
| Steamboat Springs | 20 | ..... | Binghamton | 7 | ..... |
| <i>Connecticut.</i> | <i>Inches.</i> | <i>Inches.</i> | Buffalo | 14 | 12.0 |
| Hartford | 5 | 10.0 | Canton | 17 | ..... |
| New Haven | 4 | 0.0 | Herkimer | 20 | ..... |
| West Cornwall | 11 | ..... | Ithaca | 9 | ..... |
| <i>Idaho.</i> | <i>Inches.</i> | <i>Inches.</i> | Lowville | 42 | ..... |
| Ketchum | 8 | ..... | New York | 2 | 0.0 |
| McCall | 23 | ..... | Poughkeepsie | 5 | ..... |
| Spencer | 12 | ..... | Rochester | 15 | 12.0 |
| Vienna Mine | 47 | ..... | Rome | 20 | ..... |
| <i>Illinois.</i> | <i>Inches.</i> | <i>Inches.</i> | Warwick | 7 | ..... |
| Peoria | 1 | 3.5 | Watertown | 24 | ..... |
| Walnut | 2 | ..... | <i>North Dakota.</i> | | |
| <i>Indiana.</i> | <i>Inches.</i> | <i>Inches.</i> | Bismarck | 1 | 19.0 |
| La Fayette | 2 | ..... | Devils Lake | 3 | ..... |
| Notre Dame | 4 | ..... | Williston | 1 | 25.0 |
| <i>Iowa.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Ohio.</i> | | |
| Atlantic | 4 | ..... | Ashland | 2 | ..... |
| Charles City | 2 | ..... | Cleveland | 2 | 8.0 |
| Davenport | 1 | 10.5 | Sandusky | 2 | 10.5 |
| Des Moines | 10 | 11.5 | Toledo | 4 | 12.0 |
| Estherville | 3 | ..... | <i>Oregon.</i> | | |
| <i>Maine.</i> | <i>Inches.</i> | <i>Inches.</i> | Imperial Mine | 48 | ..... |
| Gardiner | 24 | 18.0 | Sled Springs | 26 | ..... |
| Greenville | 29 | 27.0 | <i>Pennsylvania.</i> | | |
| Portland | 26 | 0.0 | Allentown | 3 | ..... |
| Van Buren | 29 | ..... | Confluence | 5 | ..... |
| <i>Maryland.</i> | <i>Inches.</i> | <i>Inches.</i> | Huntingdon | 8 | ..... |
| Frederick | 5 | ..... | Parkers Landing | 12 | ..... |
| Oakland | 8 | ..... | Pittsburgh | 2 | 0.0 |
| <i>Massachusetts.</i> | <i>Inches.</i> | <i>Inches.</i> | Warren | 16 | ..... |
| Boston | 4 | 0.0 | <i>South Dakota.</i> | | |
| Williamstown | 10 | ..... | Huron | 5 | 19.0 |
| <i>Michigan.</i> | <i>Inches.</i> | <i>Inches.</i> | Pierre | T. | 18.5 |
| Alpena | 12 | 19.0 | Yankton | 6 | 17.5 |
| Detroit | 5 | 14.0 | <i>Texas.</i> | | |
| Grand Haven | 7 | ..... | Abilene | 2 | ..... |
| Grayling | 42 | ..... | Dallas | 1 | 0.0 |
| Mancelona | 37 | ..... | Fort Worth | 2 | 0.0 |
| Marquette | 19 | 13.0 | <i>Vermont.</i> | | |
| Menominee | 20 | ..... | Brattleboro | 16 | 13.0 |
| Saginaw | 12 | 14.0 | Burlington | 14 | 14.0 |
| Sault Ste. Marie | 24 | 18.0 | St. Johnsbury | 18 | ..... |
| <i>Minnesota.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Virginia.</i> | | |
| Collegeville | 4 | ..... | Staunton | 2 | ..... |
| Duluth | 5 | 25.0 | Woodstock | 2 | ..... |
| Moorhead | 2 | 28.5 | <i>Washington.</i> | | |
| Thief River Falls | 2 | ..... | Cascade Tunnel | 38 | ..... |
| <i>Missouri.</i> | <i>Inches.</i> | <i>Inches.</i> | Laurier | 4 | ..... |
| Brunswick | 4 | ..... | <i>West Virginia.</i> | | |
| Macon | 7 | ..... | Elkins | 1 | 0.0 |
| Maryville | 4 | ..... | Hinton | 4 | ..... |
| <i>Montana.</i> | <i>Inches.</i> | <i>Inches.</i> | Huntington | 2 | ..... |
| Haugan | 10 | ..... | Romney | 4 | ..... |
| Havre | 2 | ..... | <i>Wisconsin.</i> | | |
| <i>Nebraska.</i> | <i>Inches.</i> | <i>Inches.</i> | Green Bay | 11 | 23.0 |
| Columbus | 4 | ..... | La Crosse | 3 | 20.0 |
| Omaha | 6 | ? | Milwaukee | 6 | ..... |
| O'Neill | 6 | ..... | Park Falls | 17 | ..... |
| <i>Nevada.</i> | <i>Inches.</i> | <i>Inches.</i> | Rhineland | 12 | ..... |
| Gold Creek | 16 | ..... | <i>Wyoming.</i> | | |
| North Fork | 2 | ..... | Dome Lake | 76 | ..... |
| <i>New Hampshire.</i> | <i>Inches.</i> | <i>Inches.</i> | Foxpark | 40 | ..... |
| Concord | 16 | 18.0 | Lander | 2 | ..... |
| Durham | 17 | ..... | Newcastle | 2 | ..... |
| Keene | 12 | ..... | Yellowstone Park | 6 | ..... |

*Shore ice. †Floating ice. ‡Ice gorged. § Measurement impracticable.
T. indicates trace.

Dept. of Snow on Ground, 8 p.m., February 25, 1924.



SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 13.

WASHINGTON, D. C., MARCH 4, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The stormy conditions existing over the Southeastern States, as noted in the last issue, had moved to the North Carolina coast by Wednesday morning, attended by general rains in the east Gulf and South Atlantic States, and by snows over the higher portions of the southern Appalachian system. The rains were generally heavy and considerable snow and sleet fell in some localities, though this doubtless quickly melted.

Aside from the storm referred to, there was little precipitation during the week, save in the far Northwest where showers prevailed near the coast on several dates, and probably some snow fell at the higher elevations, and at the close when a storm of considerable proportions had advanced to the middle Plains States and rain or snow, mostly light, had fallen from California northeastward to the upper Mississippi Valley.

Temperature conditions responded to the increasing length of the day, and the week, as a whole, was decidedly warmer than normal over most northern districts, particularly from the Great Lakes westward. Over the more southern districts, however, the week was mainly cooler than normal.

DEPTH OF SNOW.

The amount of snow on the ground as compared with the preceding week was less in practically all the districts where snow was reported, from the Rocky Mountains eastward. Also in portions of the Rocky Mountains and far West, the amounts are frequently less than a week ago. Over the Great Lakes and thence eastward to New England the decreases ranged up to 10 inches or more. Over Iowa and portions of adjacent States the considerable covering reported last week practically disappeared, and in the mountains of Idaho and portions of adjacent States there were small reductions.

Increases in depth were reported from points in the middle Rocky Mountains and locally in Oregon and the mountains of southern California, the latter due to the fall near the close of the week.

Compared with the preceding week the snow-covered area is now materially less, the regions uncovered during the week embracing a large part of the northern Plains, and considerable areas in the Ohio Valley and southern Appalachian Mountains. In the far West there is little or no snow in the valleys, and under the influence of generally high temperatures it receded rapidly from the moderate elevations. As a rule there was no important increase in the snow depths over the high ranges where the summer supply of water is usually stored, and in many sections the outlook for a supply from this source continues discouraging.

ICE IN RIVERS AND HARBORS.

In nearly all parts of the country where ice was reported a week ago the thickness was materially reduced during the week just closed, the greatest losses occurring on the upper Mississippi and the southern harbors of Lake Erie.

The ice harvest is generally nearing completion and the quality of that gathered is reported as good; some large plants were not operated, however.

The following statement of ice conditions on the Great Lakes is furnished by the official in charge at Detroit, Mich., the headquarters of the Weather Bureau Lake Marine Service:

Superior, fields over eastern and western portion not extensive, heavy central; Green Bay, heavy ice; Michigan, no extensive fields east or west shore except extreme southwest portion, straits covered 18-inch ice; Huron, extensive fields east, not much west shore; Erie, extensive fields along south shore Toledo to Buffalo, not much ice west portion; Ontario, heavy fields extreme east.

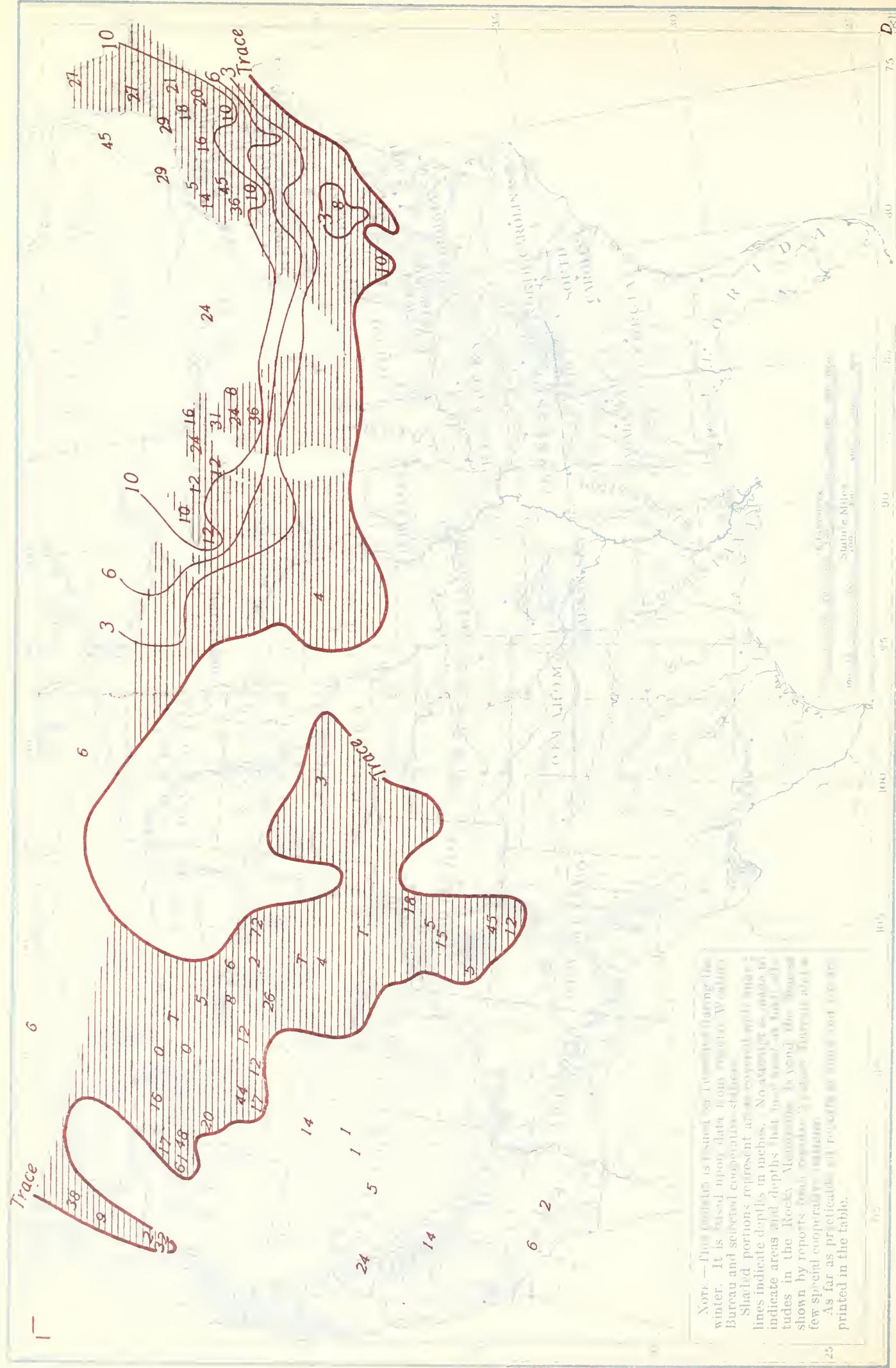
P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., MARCH 3, 1924.

| Stations. | Snow. | Ice in rivers har- bors, etc. | Stations. | Snow. | Ice in rivers har- bors, etc. |
|------------------------|----------------|-------------------------------------|------------------------|----------------|-------------------------------------|
| <i>Alaska.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Nevada.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Eagle | 29 | ..... | Arthur | 1 | ..... |
| Fort Yukon | 31 | ..... | Austin | 5 | ..... |
| Nome | 13 | ..... | Gold Creek | 14 | ..... |
| Noorvik | 15 | ..... | North Fork | 1 | ..... |
| <i>California.</i> | | | <i>New Hampshire.</i> | | |
| Huntington Lake | 14 | ..... | Berlin | 18 | ..... |
| Mount Wilson | 6 | ..... | Concord | 10 | 16.0 |
| Squirrel Inn | 2 | ..... | Durham | 16 | ..... |
| Summit | 24 | ..... | <i>New Mexico.</i> | | |
| <i>Colorado.</i> | | | Chama | 12 | ..... |
| Cumbres! | 45 | ..... | Tres Piedras | T. | ..... |
| Dillon | 18 | ..... | <i>New York.</i> | | |
| Leadville | 5 | ..... | Albany | T. | 10.0 |
| Rico | 5 | ..... | Alfred | 8 | ..... |
| <i>Connecticut.</i> | | | Buffalo | 10 | 15.0 |
| Hartford | 1 | 10.0 | Canton | 14 | ..... |
| West Cornwall | 6 | ..... | De Ruyter | 12 | ..... |
| <i>Idaho.</i> | | | Fredonia | 6 | ..... |
| McCall | 20 | ..... | Ithaca | 3 | ..... |
| Soldier Creek | 17 | ..... | New York | T. | 0.0 |
| Spencer | 12 | ..... | Ogdensburg | 18 | ..... |
| Vienna Mine | 44 | ..... | Poughkeepsie | 5 | ..... |
| <i>Illinois.</i> | | | Rochester | 9 | 12.5 |
| Chicago | T. | 0.0 | Rome | 10 | ..... |
| Peoria | 0 | † | Syracuse | 7 | ..... |
| <i>Iowa.</i> | | | Watertown | 15 | ..... |
| Charles City | 4 | ..... | <i>North Dakota.</i> | | |
| Davenport | T. | † | Bismarck | 0 | 16.0 |
| Dubuque | 1 | 17.0 | <i>Ohio.</i> | | |
| Estherville | 1 | ..... | Cleveland | T. | 6.0 |
| Pocahontas | 1 | ..... | Sandusky | 0 | 9.5 |
| Sioux City | 0 | 12.0 | Toledo | T. | † |
| <i>Maine.</i> | | | <i>Oregon.</i> | | |
| Cornish | 20 | ..... | Baker Mine | 48 | ..... |
| Eastport | 4 | 0.0 | Government Camp | 32 | ..... |
| Gardiner | 21 | 17.0 | Imperial Mine | 61 | ..... |
| Greenville | 27 | 27.0 | Sled Springs | 17 | ..... |
| Portland | 21 | 0.0 | <i>Pennsylvania.</i> | | |
| Van Buren | 27 | ..... | Erie | 1 | 14.0 |
| <i>Massachusetts.</i> | | | Gettysburg | 3 | ..... |
| Boston | T. | 0.0 | Harrisburg | 1 | † |
| Holyoke | 3 | 15.0 | Mifflintown | 4 | ..... |
| Williamstown | 4 | ..... | Pittsburgh | T. | 0.0 |
| <i>Michigan.</i> | | | Scranton | 1 | ..... |
| Alpena | 8 | 20.0 | <i>South Dakota.</i> | | |
| Cadillac | 17 | ..... | Huron | 0 | 16.0 |
| Detroit | T. | 15.0 | Rapid City | 1 | ..... |
| Escanaba | 4 | 20.0 | Yankton | 1 | 14.0 |
| Houghton | 10 | 14.5 | <i>Vermont.</i> | | |
| Ironwood | 12 | ..... | Brattleboro | 8 | 16.0 |
| Ludington | 2 | ..... | Northfield | 16 | ..... |
| Mancelona | 24 | ..... | St. Johnsbury | 12 | ..... |
| Marquette | 12 | 10.0 | <i>Washington.</i> | | |
| Menominee | 9 | ..... | Cascade Tunnel | 38 | ..... |
| Newberry | 24 | ..... | Stampede | 9 | ..... |
| Port Huron | 3 | 14.0 | <i>Wisconsin.</i> | | |
| Saginaw | 3 | 13.5 | Fond du Lac | 3 | ..... |
| Sault Ste. Marie | 16 | 18.0 | Green Bay | 5 | 18.0 |
| <i>Minnesota.</i> | | | La Crosse | 2 | 15.0 |
| Duluth | T. | 25.0 | Madison | 2 | ..... |
| Ely | 8 | ..... | Medford | 4 | ..... |
| Leech Lake Dam | 3 | ..... | Milwaukee | 1 | ..... |
| Moorhead | 0 | 28.0 | Park Falls | 18 | ..... |
| <i>Montana.</i> | | | Rhineland | 8 | ..... |
| Bozeman | 5 | ..... | Wausau | 5 | 10.0 |
| Havre | 1 | ..... | <i>Wyoming.</i> | | |
| Red Lodge | 6 | ..... | Alta | 26 | ..... |
| <i>Nebraska.</i> | | | Dome Lake | 72 | ..... |
| North Platte | 1 | ..... | South Pass City | 4 | ..... |
| Valentine | 8 | ..... | Yellowstone Park | 8 | ..... |

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p. m., March 4, 1924.



SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 14.

WASHINGTON, D. C., MARCH 11, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The storm over the middle Plains, referred to in the last issue, had moved to Lake Michigan by Tuesday morning, but without extensive precipitation, but during the following 48 hours the precipitation area extended over most eastern districts, and some heavy falls were reported locally in the Ohio Valley and Gulf States. As this storm area moved off the Atlantic coast another entered the upper Mississippi Valley, and by Friday morning it was central over the Great Lakes, attended by snow, mostly light, from the Missouri Valley eastward to the lower Lakes. This storm moved rapidly to the Canadian Maritime Provinces and light snow fell over the upper Ohio Valley and thence to New England.

During Saturday and Sunday more or less stormy conditions prevailed over the districts from the southern Rocky Mountains eastward to the Mississippi Valley. Precipitation from this storm was mostly snow, but generally light, over the northern areas affected, with rain from Texas eastward to the middle Gulf States. By Monday morning storm conditions had developed materially, with the main center over the Ohio Valley, and the precipitation area had extended northward and eastward. Snow was falling from the upper Mississippi Valley to the southern Appalachian Mountains and rain continued in the Gulf States. At this writing the storm is central over the Chesapeake Bay region, attended by high winds along the coast, and by widespread rain or snow.

The week was mainly without important temperature changes, but it was mostly colder than normal over the interior and southern districts, particularly in the Great Plains.

DEPTH OF SNOW.

During the week just closed there were generally small increases in the snow depths over all districts from the middle and northern Rocky Mountains eastward to the Great Lakes and southern Appalachian Mountains. In the vicinity of Lake Michigan and generally over Illinois, Indiana, and portions of adjacent States the increases during the week ranged up to 6 inches or more. From the lower Lakes northeastward to New England the snow depths were nearly everywhere less than reported a week ago, the decreases ranging up to 10 or more inches in portions of northern New York. West of the Rocky Mountains the snow depths were mainly less than were reported last week, the changes amounting to 12 inches or more in the mountains of northeastern Oregon.

The snow-covered area is now considerably greater than has been the case for several weeks, the Ohio and middle Mississippi Valley large portions of the Missouri Valley, bare a week ago, have more or less covering. In the western mountainous areas in the lower elevations of California there seems to have been little, if any, snow in the mountains of that State, and the outlook for a plentiful supply of water during the coming summer continues uncertain.

ICE IN RIVERS AND HARBORS.

Very little new ice formed during the week, and that previously reported continued to decrease in thickness.

The following is a detailed statement of the present ice conditions over the Great Lakes:

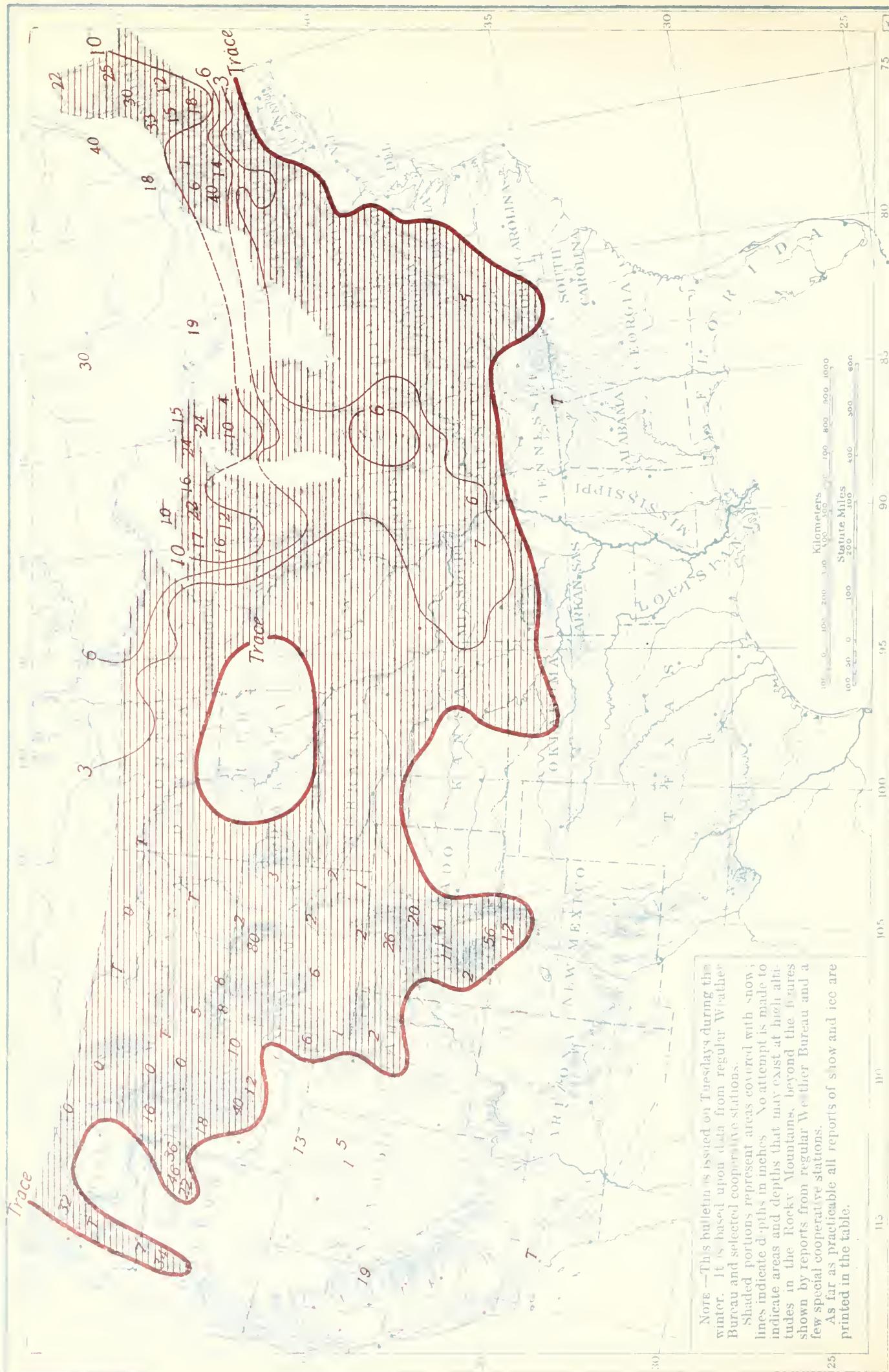
Superior, not much change eastern and western portions, fields gone from central; Michigan, no fields east or west shore except north of Glen Haven where fields extensive and heavy; no change at Straits; Huron, less ice except east shore where it extends beyond vision; St. Clair and Detroit Rivers open; Erie, fields west portion rapidly disappearing, eastern portion beyond Conneaut extensive; Ontario, no fields west, in extreme east portion fields heavy and extensive.

P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., MARCH 10, 1924.

| Stations. | Snow. | Ice in rivers har- bor, etc. | Stations. | Snow. | Ice in rivers har- bor, etc. |
|---------------------------|----------------|---------------------------------------|------------------------|----------------|---------------------------------------|
| <i>Colorado.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Nebraska.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Cumbres | 56 | | Imperial | 4 | |
| Denver | 1 | | North Platte | 1 | |
| Dillon | 20 | | <i>Nevada.</i> | | |
| Steamboat Springs | 26 | | Arthur | 5 | |
| <i>Idaho.</i> | | | Gold Creek | 18 | |
| Greenhorn | 12 | | Hylton | 1 | |
| McCall | 19 | | <i>New Hampshire.</i> | | |
| Spencer | 10 | | Concord | 7 | 14.0 |
| Vienna Mine | 40 | | Durham | 18 | |
| <i>Illinois.</i> | | | Hanover | 6 | |
| Chicago | 4 | | Pittsburg | 33 | |
| New Burnside | 6 | | <i>New York.</i> | | |
| Peoria | 2 | * | Buffalo | 2 | 14.0 |
| Salem | 5 | | Canton | 5 | |
| Springfield | 3 | | De Ruyter | 6 | |
| <i>Indiana.</i> | | | Lowville | 24 | |
| Columbus | 6 | | Plattsburg | 8 | |
| Fort Wayne | 6 | | Rochester | 4 | 9.5 |
| Indianapolis | 6 | | Saranac Lake | 6 | |
| Royal Center | 6 | | Saratoga Springs | 6 | |
| Terre Haute | 5 | 0.0 | <i>North Carolina.</i> | | |
| Vincennes | 5 | | Asheville | 2 | |
| <i>Iowa.</i> | | | Charlotte | 1 | |
| Carroll | 3 | | <i>North Dakota.</i> | | |
| Davenport | 1 | *† | Bismarck | T. | 14.0 |
| Dubuque | 2 | 15.0 | Williston | T. | 25.0 |
| Iowa Falls | 4 | | <i>Ohio.</i> | | |
| Keokuk | 2 | * | Cincinnati | 8 | 0.0 |
| <i>Kansas.</i> | | | Dayton | 4 | |
| Iola | 1 | 0.0 | Sandusky | 1 | 8.0 |
| Osage City | 3 | | Toledo | 2 | * |
| Topeka | 1 | | Wapakoneta | 5 | |
| Wichita | 1 | | <i>Oregon.</i> | | |
| <i>Kentucky.</i> | | | Government Camp | 34 | |
| Lexington | 2 | | Imperial Mine | 46 | |
| Louisville | 1 | 0.0 | <i>South Dakota.</i> | | |
| Maysville | 2 | | Huron | 0 | 14.0 |
| <i>Maine.</i> | | | Rapid City | 1 | |
| Gardiner | 12 | 15.0 | Yankton | T. | *† |
| Greenville | 30 | 27.0 | <i>Utah.</i> | | |
| Millinocket | 25 | | Duchesne | 2 | |
| Portland | 18 | 0.0 | <i>Vermont.</i> | | |
| Van Buren | 22 | | Brattleboro | T. | 13.0 |
| <i>Michigan.</i> | | | Burlington | 1 | 11.0 |
| Adrian | 2 | | Northfield | 8 | |
| Alpena | 4 | 21.0 | <i>Virginia.</i> | | |
| Battle Creek | 3 | | Wytheville | 5 | |
| Escanaba | 5 | 20.0 | <i>West Virginia.</i> | | |
| Grand Rapids | 3 | | Bayard | 2 | |
| Houghton | 10 | 18.0 | Elkins | 2 | 0.0 |
| Marquette | 16 | 8.0 | <i>Wisconsin.</i> | | |
| Port Huron | 2 | 10.0 | Brodhead | 4 | |
| Sault Ste. Marie | 15 | 20.0 | Green Bay | 9 | 17.0 |
| <i>Minnesota.</i> | | | La Crosse | T. | 12.0 |
| Duluth | T. | 20.5 | Madison | 6 | |
| Grand Meadow | 4 | | Medford | 10 | |
| International Falls | 8 | | Milwaukee | 5 | |
| Leech Lake Dam | 3 | | Park Falls | 16 | |
| Moorhead | 1 | 22.5 | Rhineland | 12 | |
| <i>Missouri.</i> | | | Wausau | 12 | 14.0 |
| Brunswick | 6 | | <i>Wyoming.</i> | | |
| Columbia | 2 | | Casper | 2 | |
| Hannibal | 3 | * | Cheyenne | 1 | |
| Kansas City | 2 | 0.0 | Dome Lake | 80 | |
| Mountain Grove | 5 | | Evanston | 1 | |
| St. Louis | 3 | 0.0 | Newcastle | 3 | |
| Springfield | 1 | | Sheridan | 2 | |
| <i>Montana.</i> | | | South Pass City | 6 | |
| Bozeman | 5 | | Yellowstone Park | 8 | |
| Red Lodge | 8 | | | | |

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable.
T. indicates trace.



NOTE.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations. Shaded portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations. As far as practicable all reports of snow and ice are printed in the table.

25 Kilometers
0 100 200 300 400 500 600 700 800 900 1000
Statute Miles
0 100 200 300 400 500 600 700 800 900 1000

SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 15.

WASHINGTON, D. C., MARCH 18, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The storm over the Chesapeake Bay region at the beginning of the week moved northeastward off the coast, and continued its severe character for several days as it advanced into the North Atlantic. The precipitation area to northward of Pennsylvania was confined, however, mainly to the coast districts. In the Appalachian Mountain districts and in some sections to the eastward the snowfall from this storm was heavy, high winds prevailed and much damage resulted, particularly over the middle Atlantic coast districts where heavy snow, and in some cases sleet, in conjunction with the high winds, greatly damaged overhead wire connections, delayed transportation, and cut off large centers of population from communication for considerable periods. This storm, on the whole, was a close second to the so-called blizzard of about the same date in 1888 over nearly the same territory.

At the time the last mentioned storm was passing off the Atlantic coast another entered the far Southwest and moved eastward over the southern districts attended by more or less precipitation from the southern Rocky Mountains eastward, light snows occurring over the northern portions of the area affected. As this storm passed into the Atlantic another developed over the Plateau and Rocky Mountain regions and by Saturday morning was central over Utah and Colorado, attended by generally light snows to the northward. By Monday morning this storm area had advanced to the lower Missouri Valley and snow or rain had fallen over much of the country between the Rocky Mountains and the Mississippi River, the snowfall being heavy over portions of Kansas and Nebraska, and locally in adjacent States.

DEPTH OF SNOW.

On the average the depth of snow did not change greatly, as reductions in the more eastern districts were largely balanced by increases over the Rocky Mountains and adjacent regions.

From the Ohio River and southern Missouri northeastward over the Great Lakes, a material decrease occurred as compared with the previous week, and the heavy covering over the southern Appalachian Mountains and to the eastward that fell at the close of the previous and the beginning of the present week had mainly disappeared. From northern New Mexico and eastern Utah over Colorado, Kansas, and Nebraska to Iowa there were material increases during the week, due mainly to heavy falls near the close. In portions of this area the increases ranged up to 15 inches, and at points in the high mountains of northern New Mexico and southern Colorado they ranged up to 3 feet or more. In the far western mountains the week was mainly without material snowfall, save in northeastern Oregon, where there were local increases in depth ranging up to nearly 2 feet. In the mountains of California there was a continued absence of any important snowfall.

ICE IN RIVERS AND HARBORS.

No notable changes occurred in the ice conditions as compared with the preceding week, due to continued cold.

Over the Great Lakes the ice conditions are set forth in the following statement:

Superior, fields extensive over west and east portions, open water off Keweenaw Point; Michigan, no change in Green Bay, west shore of Michigan some broken fields and extreme southeast, from Glen Haven north to Straits ice heavy and stationary; Huron, open water north end along west shore, extensive fields Harbor Beach to Port Huron; St. Clair and Detroit Rivers open; Erie, winds have moved fields to south shore where they extend beyond vision, heavy Conneaut to Buffalo; Ontario, no fields except extreme east end.

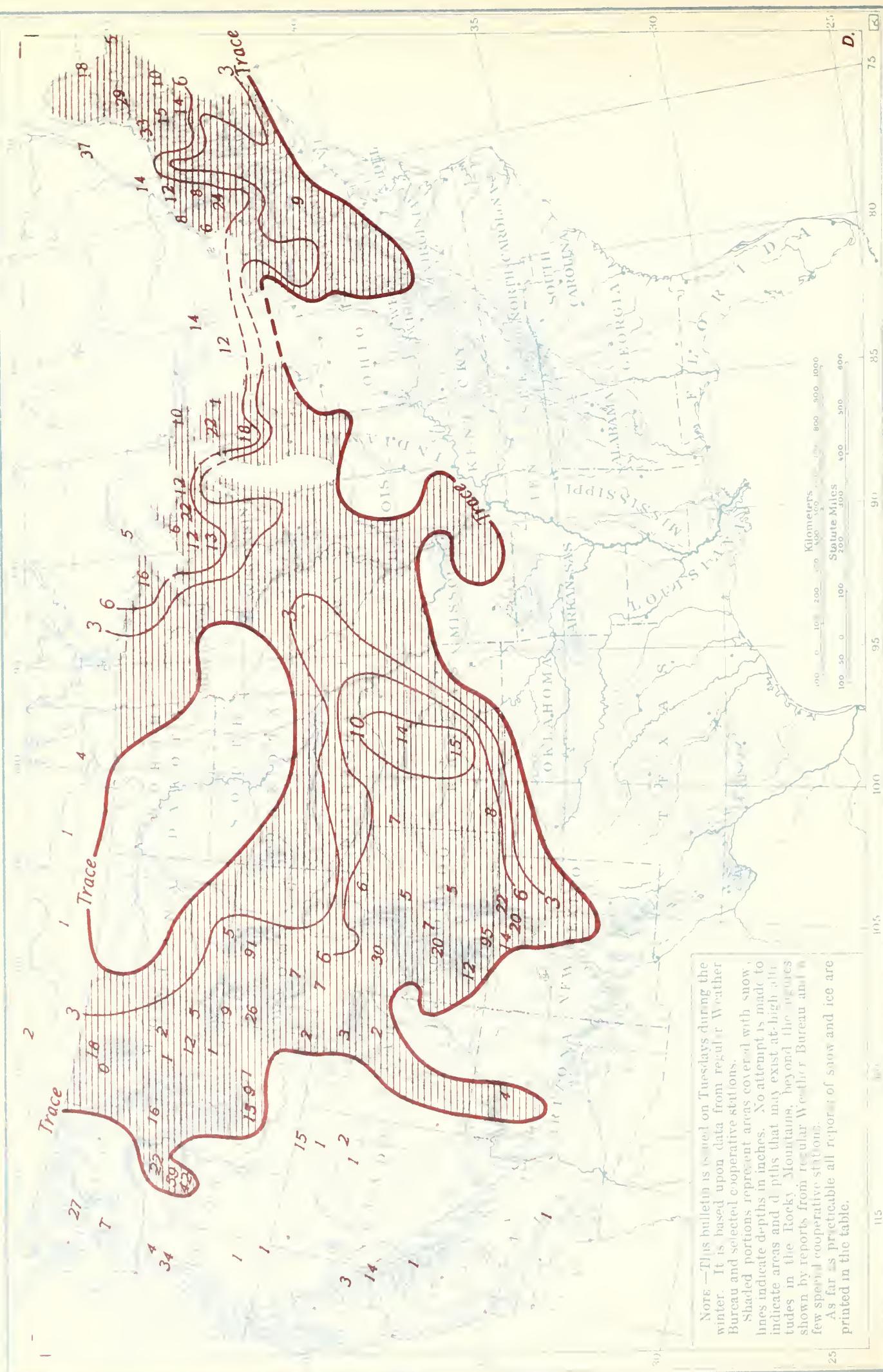
P. C. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., MARCH 17, 1924.

| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers, har- bors, etc. |
|------------------------|----------------|---|------------------------|----------------|---|
| <i>Arizona.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Nevada.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Grand Canyon | 4 | | Arthur | 2 | |
| Williams | 1 | | North Fork | 1 | |
| <i>California.</i> | | | <i>New Hampshire.</i> | | |
| Sierraville | 3 | | Berlin | 15 | |
| Summit | 14 | | Concord | 1 | 12.0 |
| <i>Colorado.</i> | | | Hanover | 6 | |
| Cumbres | 95 | | <i>New Mexico.</i> | | |
| Denver | 5 | | Chama | 14 | |
| Leadville | 7 | | Des Moines | 6 | |
| Pueblo | 5 | 0.0 | Tres Piedras | 20 | |
| Rico | 12 | | <i>New York.</i> | | |
| <i>Connecticut.</i> | | | Alfred | 5 | |
| Hartford | 0 | † | Buffalo | 0 | 15.0 |
| West Cornwall | 5 | | Canton | 7 | |
| <i>Idaho.</i> | | | Herkimer | 4 | |
| Mackay | 1 | | Malone | 12 | |
| Soldier Creek | 15 | | Oswego | 4 | 11.0 |
| <i>Illinois.</i> | | | Rochester | 3 | 7.0 |
| Griggsville | 1 | | Saranac Lake | 8 | |
| Salem | 1 | | Syracuse | 2 | |
| <i>Iowa.</i> | | | Warwick | 2 | |
| Atlantic | 5 | | <i>North Dakota.</i> | | |
| Charles City | 3 | | Bismarck | 0 | 12.0 |
| Dubuque | 2 | 13.0 | Williston | 0 | 21.0 |
| Estherville | 3 | | <i>Ohio.</i> | | |
| Pocahontas | 5 | | Cleveland | 0 | † |
| Sioux City | 3 | † | Sandusky | 0 | 7.5 |
| <i>Kansas.</i> | | | <i>Oregon.</i> | | |
| Dodge City | 8 | | Government Camp | 34 | |
| Ellinwood | 15 | | Imperial Mine | 59 | |
| Liberal | 8 | | Lakeview | 1 | |
| Wichita | 2 | | Sled Springs | 22 | |
| <i>Maine.</i> | | | <i>Pennsylvania.</i> | | |
| Cornish | 14 | | Erie | 0 | 9.0 |
| Greenville | 29 | 27.0 | Franklin | 2 | |
| Houlton | 18 | | Warren | 7 | |
| Portland | 9 | 0.0 | <i>South Dakota.</i> | | |
| <i>Maryland.</i> | | | Huron | 0 | 13.0 |
| Oakland | 5 | | Pierre | 0 | * |
| <i>Massachusetts.</i> | | | Rapid City | 2 | |
| Boston | 8 | 0.0 | Yankton | 2 | *† |
| Holyoke | T. | † | <i>Utah.</i> | | |
| <i>Michigan.</i> | | | Duchesne | 2 | |
| Cadillac | 18 | | Moab | 4 | |
| Escanaba | 2 | 20.0 | <i>Vermont.</i> | | |
| Houghton | 6 | 13.5 | Brattleboro | T. | 12.0 |
| Humboldt | 22 | | Burlington | 1 | 12.0 |
| Ironwood | 12 | | Northfield | 8 | |
| Saginaw | 2 | 10.5 | St. Johnsbury | 6 | |
| Sault Ste. Marie | 10 | 20.0 | <i>Washington.</i> | | |
| <i>Minnesota.</i> | | | Cascade Tunnel | 27 | |
| Duluth | T. | 19.5 | <i>West Virginia.</i> | | |
| Ely | 16 | | Elkins | 1 | 0.0 |
| Leech Lake Dam | 2 | | Romney | 2 | |
| Moorhead | 0 | 18.5 | Rowlesburg | 1 | |
| <i>Missouri.</i> | | | <i>Wisconsin.</i> | | |
| Maryville | 2 | | Fond du Lac | 4 | |
| St. Joseph | 1 | | Green Bay | 3 | 16.0 |
| Unionville | 3 | | Madison | 2 | |
| <i>Montana.</i> | | | Medford | 4 | |
| Belton | 18 | | Wausau | 4 | 13.0 |
| Helena | 2 | | <i>Wyoming.</i> | | |
| <i>Nebraska.</i> | | | Alta | 26 | |
| Auburn | 7 | | Cheyenne | 6 | |
| Guide Rock | 14 | | Dome Lake | 91 | |
| Lincoln | 7 | | Evanston | 3 | |
| North Platte | 4 | | Lander | 7 | |
| Omaha | 5 | † | Sheridan | 5 | |
| O'Neill | 4 | | South Pass City | 7 | |
| Valentine | 2 | | Yellowstone Park | 9 | |

*Shore ice. †Floating ice. ‡Ice gorged. § Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p. m., March 17, 1924.



Note.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations. Shaded portions represent areas covered with snow, lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and few special cooperative stations. As far as practicable all reports of snow and ice are printed in the table.

SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 16.

WASHINGTON, D. C., MARCH 25, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The week opened with generally cold weather for the season over most districts, particularly in the Great Plains and western mountains, and there were local rains in the Gulf States and far Southwest, and light snows in portions of the upper Mississippi Valley. By Thursday morning a storm of considerable importance had developed in the middle Gulf States and rain or snow was falling over a wide area from the Great Plains southeastward to the South Atlantic States.

This storm moved northeastward attended by general precipitation from the middle and lower Mississippi Valley eastward to the Atlantic coast, heavy rains or snows falling in portions of the Atlantic coast States and general snows over the northern portions of the precipitation area. In the meantime unsettled conditions prevailed over the mountain sections of the West, with light snows at the higher elevations and local rains at points in the Pacific Coast States.

Light snows occurred during the latter part of the week locally in the Great Plains and western mountains, but to the eastward there was little precipitation.

The week as a whole was unusually cold over most central and all southern districts, the average temperatures ranging in most localities from 5° to 15° below the normal. From the Dakotas eastward to New England the week was moderately warm and there was little precipitation.

DEPTH OF SNOW.

Over practically all districts from the Rocky Mountains eastward the depth of snow cover, where it still remains, is less than a week ago, despite the heavy falls over portions of the Ohio Valley and Middle Atlantic States, about the 20th and 21st, which had mainly melted before the close. In the upper Lake region and over New York and New England the reduction in depth was moderately large, ranging up to a foot or more. A considerable portion of the heavy covering over the middle Plains a week ago melted despite the fact that some heavy falls occurred this week over parts of the area.

In the western mountains increases were the rule though mainly not large, except in portions of the Plateau region and in some of the high elevations of California, where locally the falls during the week ranged up to two feet or more. Local heavy falls occurred in Utah, and moderate to heavy amounts occurred over much of Arizona, though most of it melted before the close.

The snow-covered area increased considerably during the week over the Plateau and far western mountain districts, but diminished in the lower Missouri and upper Mississippi Valleys, and over the middle Appalachian Mountains. In the eastern districts important depths of snow now remain only over the more northern portions of New England, locally in the mountains of northern New York, and in northern Michigan and near Lake Superior.

ICE IN RIVERS AND HARBORS.

Moderately cold weather prevented any important breaking up of the ice on the upper Missouri, but elsewhere the ice is moving; navigation will open soon on most main streams.

The ice conditions over the Great Lakes are set forth in the following statement:

Superior, ice fields continue over west and east portions with open water central; Green Bay ice softening; Michigan, no fields except from North Manitou Island north to Straits where ice covering is melting; Huron, no fields over Huron except extreme south and east shore; rivers open; Erie, floating ice west portion, north winds have moved fields to south shore and extend beyond vision from Cleveland east to Buffalo; Ontario, none except floating at extreme east portion.

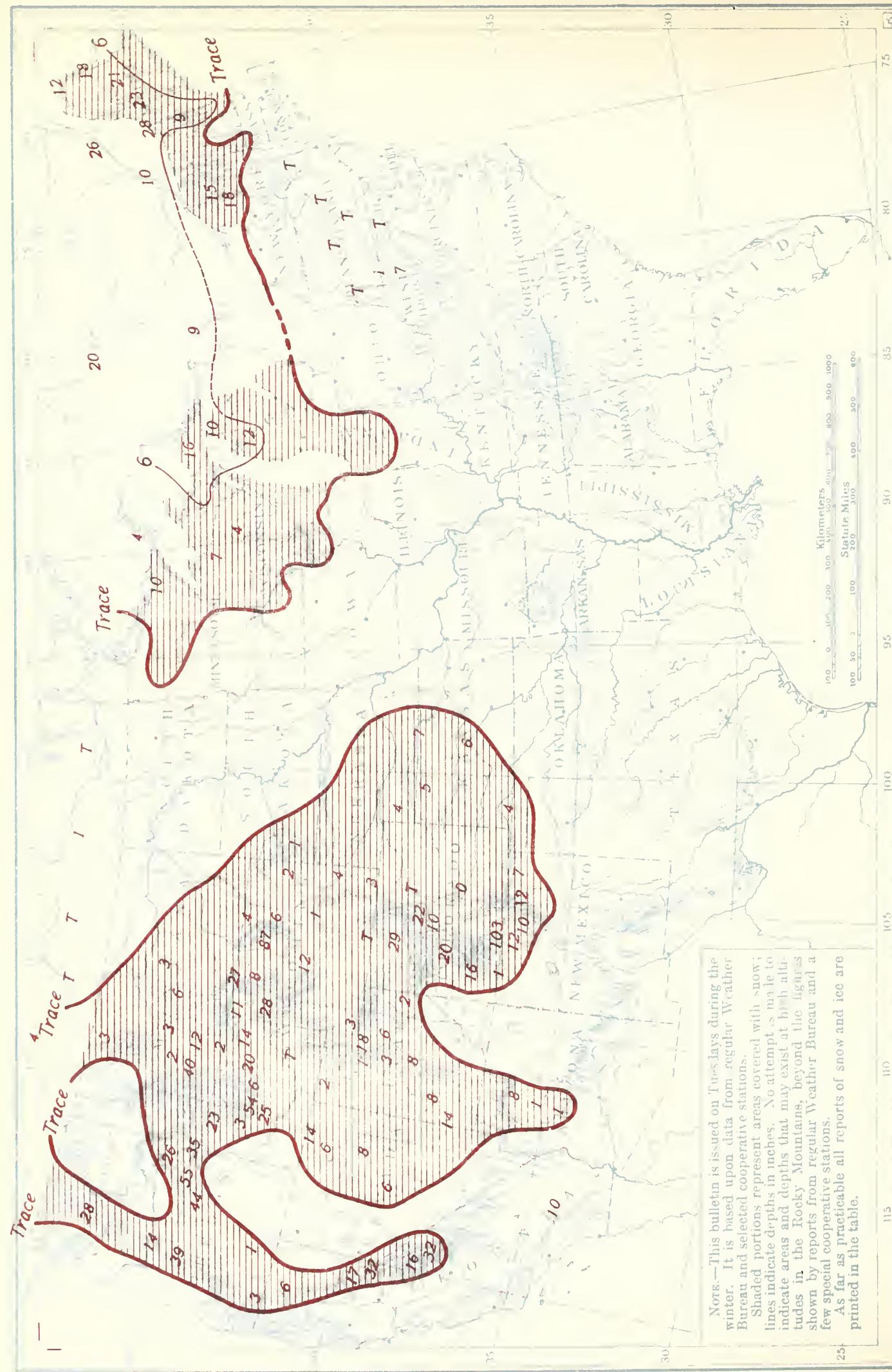
P. O. DAY,
Meteorologist, in charge of Division.

SNOW DEPTH AND ICE THICKNESS. 8 P. M., MARCH 24, 1924.

| Stations. | Snow. | Ice in rivers, har- bors, etc. | Stations. | Snow. | Ice in rivers, har- bors, etc. |
|-----------------------------|---------------|---|----------------------------|--------------|---|
| <i>Arizona.</i> | | | <i>Nebraska.</i> | | |
| Grand Canyon | 8 | | Broken Bow | 1 | |
| Prescott | 1 | | Guide Rock | 7 | |
| Williams | 1 | | Imperial | 4 | |
| <i>California.</i> | | | <i>Nevada.</i> | | |
| Cascada | 20 | | Austin | 6 | |
| Emigrant Gap | 17 | | Gold Creek | 14 | |
| Huntington Lake | 32 | | Hylton | 8 | |
| McCloud | 6 | | North Fork | 6 | |
| Sierraville | 2 | | <i>New Hampshire.</i> | | |
| Squirrel Inn | 10 | | Berlin | 9 | |
| Summit | 32 | | Durham | 6 | |
| Yosemite | 16 | | Lancaster | 2 | |
| <i>Colorado.</i> | | | Pittsburg | 28 | |
| Crested Butte | 20 | | <i>New Mexico.</i> | | |
| Cumbres | 103 | | Chama | 12 | |
| Dillon | 22 | | Cloudcroft | 1 | |
| Durango | 1 | | Des Moines | 2 | |
| Leadville | 10 | | Elizabethtown | 12 | |
| Rico | 16 | | Tres Piedras | 10 | |
| Steamboat Springs | 29 | | Truchas | 7 | |
| <i>Idaho.</i> | | | <i>New York.</i> | | |
| Hailey | 9 | | Beaver River | 15 | |
| Idaho City | 2 | | Buffalo | 0 | 14.0 |
| Ketchum | 6 | | Lowville | 18 | |
| McCall | 23 | | Oswego | 0 | 10.0 |
| Mackay | 4 | | Rome | 2 | |
| Soldier Creek | 25 | | <i>North Dakota.</i> | | |
| Spencer | 14 | | Bismarck | 0 | 11.0 |
| Vienna Mine | 54 | | Williston | 0 | 17.0 |
| <i>Indiana.</i> | | | <i>Oregon.</i> | | |
| Howe | 1 | | Baker Mine | 35 | |
| La Fayette | 1 | | Government Camp | 39 | |
| Marion | 2 | | Imperial Mine | 55 | |
| <i>Iowa.</i> | | | Larch Mountain | 14 | |
| Dubuque | T. | † | Silver Lake | 1 | |
| <i>Kansas.</i> | | | Siskiyou | 3 | |
| Concordia | 1 | | Sled Springs | 26 | |
| Dodge City | 1 | | <i>Utah.</i> | | |
| Dresden | 5 | | Duchesne | 6 | |
| Ellinwood | 6 | | Kelton | 2 | |
| Liberal | 4 | | Manti | 8 | |
| <i>Maine.</i> | | | Milford | 8 | |
| Gardiner | 5 | † | Modena | 14 | |
| Greenville | 23 | 27.0 | Provo | 3 | |
| Millinocket | 21 | | Salt Lake City | 1 | |
| Portland | 1 | 0.0 | Watson | 2 | |
| Van Buren | 12 | | <i>Vermont.</i> | | |
| <i>Maryland.</i> | | | Burlington | T. | 8.0 |
| Oakland | 1 | | Northfield | 1 | |
| <i>Michigan.</i> | | | <i>Washington.</i> | | |
| Cadillac | 12 | | Cascade Tunnel | 28 | |
| Escanaba | T. | 18.0 | West Virginia. | | |
| Houghton | 4 | 10.0 | Bayard | 7 | |
| Mackinaw | 10 | | <i>Wisconsin.</i> | | |
| Maple Ridge | 10 | | Green Bay | T. | 6.0 |
| Marquette | 2 | 10.0 | Park Falls | 7 | |
| Newberry | 16 | | Rhinelander | 4 | |
| Sault Ste. Marie | 2 | 15.0 | <i>Wyoming.</i> | | |
| <i>Minnesota.</i> | | | Alta | 28 | |
| Duluth | T. | 20.5 | Buffalo | 6 | |
| Ely | 10 | | Casper | 1 | |
| Moorhead | 0 | 9.0 | Cheyenne | 3 | |
| <i>Montana.</i> | | | Cody | 8 | |
| Browning | 3 | | Dome Lake | 87 | |
| Dillon | 2 | | Evanston | 3 | |
| Findon | 6 | | Lander | 12 | |
| Helena | 3 | | Newcastle | 2 | |
| Lewistown | 3 | | Sheridan | 4 | |
| Red Lodge | 27 | | Torrington | 4 | |
| Silver Lake | 40 | | Yellowstone Park | 11 | |

*Shore ice. †Floating ice. ‡Ice gorged. §Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p. m., March 24, 1924.



NOTE.—This bulletin is issued on Tuesdays during the winter. It is based upon data from regular Weather Bureau and selected cooperative stations. Shaded portions represent areas covered with snow; lines indicate depths in inches. No attempt is made to indicate areas and depths that may exist at high altitudes in the Rocky Mountains, beyond the figures shown by reports from regular Weather Bureau and a few special cooperative stations.
As far as practicable all reports of snow and ice are printed in the table.

SNOW AND ICE BULLETIN

U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.
CHARLES F. MARVIN, Chief.

No. 17.

WASHINGTON, D. C., APRIL 1, 1924.

WINTER 1923-24.

GENERAL SUMMARY OF THE WEATHER DURING THE WEEK.

The marked feature of the weather during the week ended March 31 was the severe storm that overspread the greater part of the country during the middle and latter portions.

This storm probably had its origin over the northern Plateau region during Thursday, and by Friday morning appeared as a well marked cyclone central over Colorado, attended by scattered precipitation, mostly light snow, over the Rocky Mountain and Plateau regions, and by generally cloudy weather and local light rains to the eastward as far as the Mississippi Valley. During the following 24 hours the storm increased greatly in severity and by Saturday morning was central over southern Iowa, and the precipitation area embraced practically all the central portions of the country from the Great Plains eastward. It was attended by high winds over the interior districts and by snow to westward and northward of the storm center, and by heavy rains to eastward and southward. From Iowa the storm moved rapidly northeastward to the St. Lawrence Valley by Sunday morning, at which time precipitation was confined mainly to the area from the upper Mississippi Valley eastward, snow falling as far east as the lower Lakes and rain to the eastward.

Heavy rains with melting snow in the Appalachian Mountains during this storm caused severe floods and much damage in western Maryland and portions of adjoining States.

DEPTH OF SNOW.

The severe storm toward the latter part of the week gave heavy snow over the northern part of its course, particularly from Kansas northeastward to Michigan, where the depth ranged up to a foot or more, the falls being particularly heavy from eastern South Dakota to northern Michigan. Some glaze or ice occurred in connection with the snow and rain, and more or less damage resulted to trees and overhead wire systems, and high winds caused much drifting.

In most other parts of the country the snowfall for the week was mainly light except locally in the mountains of Oregon and Washington where there were some heavy falls.

The total snow-covered area remains about as reported a week ago, and is considerably greater than is usual at the end of March. However, material depths east of the Rocky Mountains are now confined to the extreme northern portions of New England, the higher mountains of northern New York, and from eastern Nebraska to northern Michigan.

In the western mountains there is now very generally less snow than usual, particularly in the central and southern portions. No material increases occurred in the mountains of California and Nevada, where the snowfall has been unusually light during the entire season, and the amounts now on the ground are the least in many years.

ICE IN RIVERS AND HARBORS.

The ice has now disappeared from all the main rivers, save the upper Missouri and in northern New England.

The ice conditions over the Great Lakes are set forth in the following statement from Detroit:

Superior, fields continue over east and west portions, open water center; Whitefish Bay solid and no change lower St. Marys River; breaking up in Green Bay; Michigan, fields confined to northeast portion, cold weather holds conditions unchanged at straits; Huron, no fields except extreme south portion and broken fields along east shore; rivers open; Erie, broken fields west portion, extensive Cleveland east to Buffalo; Ontario, fields practically disappeared.

P. C. DAY,
Meteorologist, in charge of Division.

NOTE.—This issue is the last for the winter of 1923-24. A brief report on ice conditions over the Great Lakes, issued from the Weather Bureau office at Detroit, Mich., will continue for a few weeks. Copies may be secured from that office.

SNOW DEPTH AND ICE THICKNESS, 8 P. M., MARCH 31, 1924.

| Stations. | Snow. | Ice in rivers har- bors, etc. | Stations. | Snow. | Ice in rivers har- bors, etc. |
|--------------------|----------------|-------------------------------------|-----------------------|----------------|-------------------------------------|
| <i>Alaska.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Montana.</i> | <i>Inches.</i> | <i>Inches.</i> |
| Cordova | 8 | — | Browning | 2 | — |
| Eagle | 17 | — | Haugan | 2 | — |
| Fort Yukon | 21 | — | Lewistown | 1 | — |
| Nome | 12 | — | Pipestone Dam | 16 | — |
| <i>Arizona.</i> | <i>Inches.</i> | <i>Inches.</i> | Red Lodge | 28 | — |
| Flagstaff | 2 | — | <i>Nebraska.</i> | | |
| Grand Canyon | 3 | — | Omaha | T. | † |
| Pinedale | 3 | — | O'Neill | 3 | — |
| <i>California.</i> | | | Tekamah | 1 | — |
| Cascade | 7 | — | <i>Nevada.</i> | | |
| Emigrant Gap | 20 | — | Gold Creek | 14 | — |
| Huntington Lake | 29 | — | <i>New Hampshire.</i> | | |
| Mount Wilson | 5 | — | Pittsburg | 24 | — |
| Squirrel Inn | 7 | — | <i>New Mexico.</i> | | |
| Summit | 33 | — | Chama | 4 | — |
| Yosemite | 5 | — | Elizabethtown | 12 | — |
| <i>Colorado.</i> | | | Tres Piedras | 3 | — |
| Crested Butte | 30 | — | <i>New York.</i> | | |
| Cumbres | 115 | — | Beaver River | 15 | — |
| Dillon | 36 | — | Buffalo | T. | 12.0 |
| Leadville | 10 | — | Lowville | 6 | — |
| Rico | 18 | — | Malone | 2 | — |
| <i>Idaho.</i> | | | Ogdensburg | 1 | — |
| Greenhorn | 12 | — | Rome | 1 | — |
| Pierce City | 12 | — | Saranac Lake | 2 | — |
| Soldier Creek | 23 | — | Watertown | 1 | — |
| Spencer | 12 | — | <i>North Dakota.</i> | | |
| <i>Indiana.</i> | | | Bismarck | 1 | 10.0 |
| Cambridge City | 1 | — | Williston | 0 | 13.0 |
| Columbus | 1 | — | <i>Ohio.</i> | | |
| La Fayette | 1 | — | Cleveland | 0 | † |
| Marion | 2 | — | <i>Oregon.</i> | | |
| Notre Dame | 2 | — | Baker Mine | 33 | — |
| Wheatfield | 1 | — | Government Camp | 62 | — |
| <i>Iowa.</i> | | | Larch Mountain | 36 | — |
| Albia | 1 | — | Welches | 2 | — |
| Carroll | 1 | — | <i>Pennsylvania.</i> | | |
| Charles City | 2 | — | Erie | 0 | † |
| Des Moines | 1 | 0.0 | <i>South Dakota.</i> | | |
| Forest City | 2 | — | Huron | 9 | 6.0 |
| Iowa City | 1 | — | Pierre | 1 | † |
| Iowa Falls | 2 | — | Rapid City | 1 | — |
| Pocahontas | 5 | — | Yankton | 4 | † |
| Sioux City | 4 | † | <i>Utah.</i> | | |
| <i>Maine.</i> | | | Duchesne | 1 | — |
| Gardiner | T. | * | Modena | 1 | — |
| Greenville | 22 | 27.0 | <i>Washington.</i> | | |
| Millinocket | 19 | — | Cascade Twp. | 48 | — |
| Van Buren | 6 | — | Stampede | 8 | — |
| <i>Michigan.</i> | | | <i>Wisconsin.</i> | | |
| Alpena | 4 | † | Ashland | 4 | — |
| Cadillac | 12 | — | Fond du Lac | 6 | — |
| Escanaba | 6 | 16.0 | Green Bay | 8 | 0.5 |
| Houghton | 5 | ‡ | La Crosse | 5 | 0.0 |
| Ludington | 2 | — | Madison | 1 | — |
| Mackinaw | 14 | — | Medford | 12 | — |
| Maple Ridge | 3 | — | Park Falls | 20 | — |
| Marquette | 10 | 7.0 | Rhineland | 12 | — |
| Menominee | 10 | — | Wausau | 13 | 8.0 |
| Sault Ste. Marie | 2 | 17.0 | Wisconsin Rapids | 3 | — |
| <i>Minnesota.</i> | | | <i>Wyoming.</i> | | |
| Duluth | T. | 17.5 | Alta | 35 | — |
| Ely | 7 | — | Buffalo | 3 | — |
| Grand Meadow | 4 | — | Casper | 1 | — |
| Mankato | 15 | — | Cody | 4 | — |
| Minneapolis | 12 | — | Evanston | 2 | — |
| Moorhead | 0 | 8.5 | Lander | 5 | — |
| Mora | 6 | — | Newcastle | 2 | — |
| St. Paul | 16 | † | South Pass City | 17 | — |
| Worthington | 5 | — | Yellowstone Park | 13 | — |

*Shore ice. †Floating ice. ‡Ice gorged. § Measurement impracticable.
T. indicates trace.

Depth of Snow on Ground, 8 p. m., March 31, 1924.

